



# Canadian Geographical Journal

*Published monthly by*

THE CANADIAN GEOGRAPHICAL SOCIETY

EDITOR

LAWRENCE J. BURPEE

Ottawa, Canada

PUBLISHER

GEORGE A. MACKIE

Fifth Floor - Sun Life Building - Montreal



APRIL, 1933

Entered as second-class matter at the  
Post Office, Montreal, Canada

VOL. VI., No. 4

## In This Issue

**La Vérendrye—Pathfinder of the West**  
LAWRENCE J. BURPEE 159

**Johannesburg the Golden**  
HEDLEY A. CHILVERS 169

**Indian Handicrafts of Algoma**  
MABEL CREWS RINGLAND 185

**Bituminous Sands of Alberta**  
S. C. ELLS 203

*This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustration, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.*

*The British standard of spelling is adopted, substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1929.*

*Contents of this Journal are copyright.*

Address communications regarding change of address, non-delivery of Journal, etc., to The Canadian Geographical Society, Publication Office, Fifth Floor; Sun Life Building; Montreal, Que., giving old and new address. On all new memberships, the expiry date will be printed on wrapper containing starting number. This will constitute a receipt for subscription.

Member Audit Bureau of Circulations.

Membership fee is \$3.00 per year in Canada and other parts of the British Empire, which includes delivery of the Journal, postpaid; in United States and Mexico, \$3.50; in other countries \$4.00. Make membership fee payable at par in Montreal.



Statue of La Vérendrye in Quebec. By Jan Bailleul. As no portrait exists of the explorer, this represents rather the spirit of adventure in La Vérendrye than a physical likeness. The autograph is a facsimile of La Vérendrye's signature.

*La Vérendrye*



## LA VÉRENDRYE —

### Pathfinder of the West

By LAWRENCE J. BURPEE

OF all that gallant company of adventurers who helped, each in his time and degree, to unroll the map of Canada, one alone was native born — La Vérendrye. Pierre Gaultier de Varennes, Sieur de la Vérendrye,—to give him his full, high-sounding name — was born in the town of Three Rivers, on the St. Lawrence, in November, 1685. As his name suggests, he was of gentle birth, his father being Governor of the district of which Three Rivers was the capital. His mother was a daughter of Pierre Boucher, a former Governor of the same district.

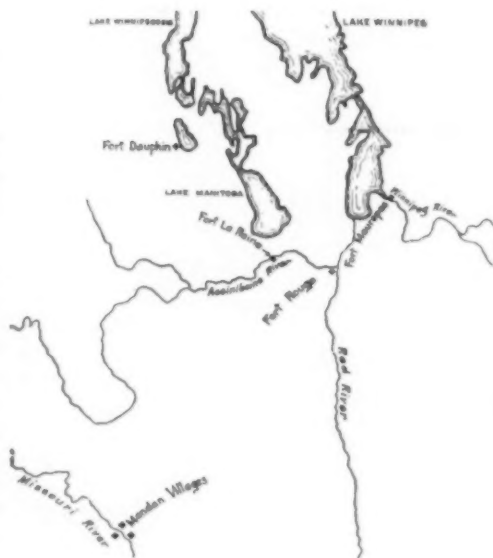
With La Vérendrye's early years we are not concerned here. It was not, in fact, until he had reached well into the forties that he began the course of western exploration which was to engage all his thought and energy for

the remainder of his life, and bring him abundant fame, though not in his own lifetime or for many years afterwards. Without doubt La Vérendrye had dreamed and planned schemes of western discovery long before there was any possibility of turning them into realities. He had served in the army, both in America and Europe, had been seriously wounded at the battle of Malplaquet, had afterwards married and settled down for a time on the St. Maurice, and in 1726 had been put in command of an important trading post on Lake Nipigon, north of Lake Superior.

Here there came to him one day an Indian named Ochagach, who told him that he had travelled far towards the setting sun until he came to a great lake, out of which a river flowed to the westward. He had descended this river, he said, until he reached a point where

the water ebbed and flowed. He had not been able to go down to its mouth because of hostile tribes, but had been told that the river emptied into a great salt lake or sea.

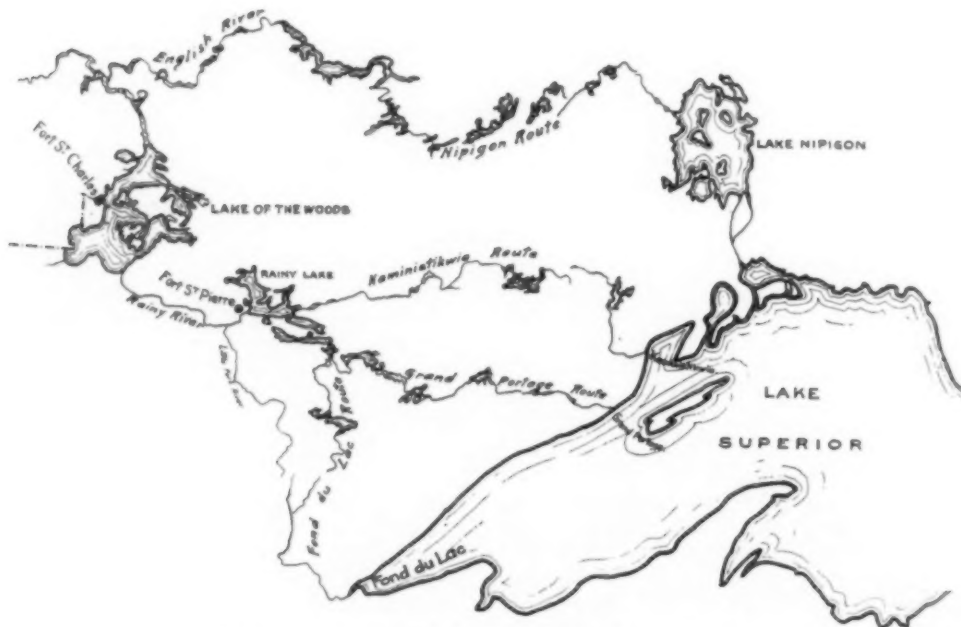
La Vérendrye's imagination, already filled with pictures of the unknown land beyond Lake Superior, took fire, and he determined at all costs to seek for and find that Western Sea which had been the elusive goal of all the explorers of New France. Resigning his Nipigon command he returned to Quebec, taking with him a curious map drawn by Ochagach. The then Governor General, the Marquis de Beauharnois, was a man of broad views, keenly interested



*Sketch map showing the Assiniboine country, Fort la Reine and the Mandan villages on the Missouri.*

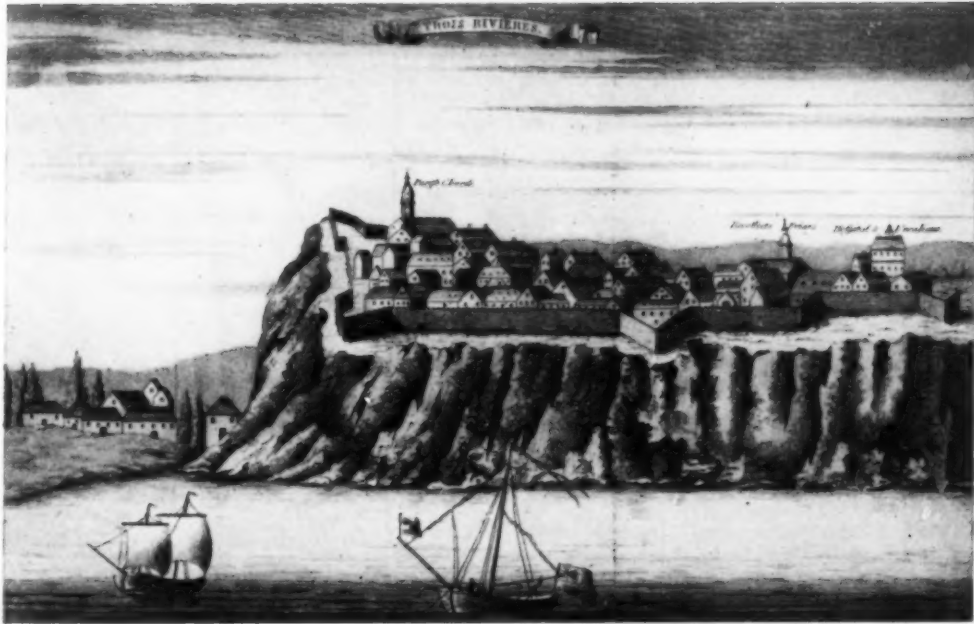
in the cause of western discovery. He entered warmly into the plans of La Vérendrye, and wrote Louis XV urging that the explorer should be given the command of a hundred men and sufficient supplies and equipment to carry his project to a successful conclusion. The King, however, was at that time deeply engaged in European wars, and all that he would agree to was that La Vérendrye should be given a monopoly of the fur trade in the country beyond

Lake Superior. That is to say, he was permitted to build trading posts and trade with the Indians, and might use the profits to cover the cost of his discoveries towards the Western Sea.



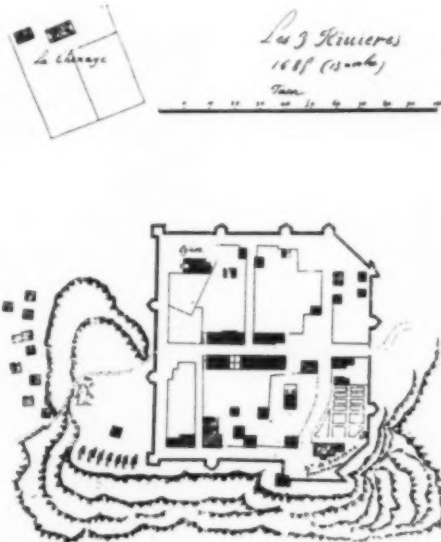
*Portage routes from Lake Superior to the westward.*





*Three Rivers in the days of La Vérendrye, from an old drawing. Although some features show variance in some respects, there is a marked similarity between the details of the drawing and the plan which appears below. The location of the parish church is the same and some of the bastions of the wall correspond in both drawing and plan. The windmill and the battery of guns shown in the plan do not, however, appear in the drawing.*

Not a very promising scheme from any point of view, and one that at the best must necessarily mean very slow progress in exploration. Any man less enthusiastic and determined would have thrown the matter up in disgust. La Vérendrye, however, set to work at once, put his own little fortune into the project, and, not without difficulty, persuaded some of the Montreal merchants to go into partnership with him, on the understanding that they would provide



*Plan of the town of Three Rivers, dated November 13, 1685. La Vérendrye was born in the house at the north east angle which bears the name of his father, "M. de Varenne, Gouverneur", four years after the date of this plan.*

equipment and supplies and pay the men, and in return get all the profits of the fur trade.

In the early summer of 1731, therefore, we find the expedition setting forth from Montreal, in a brigade of birch-bark canoes. With La Vérendrye went three sons, his nephew La Jemeraie, and a party of canoe men, hunters and soldiers — a very much smaller party than that contemplated by the Governor, but the best that La Vérendrye could manage with his limited resources.



*One of La Vérendrye's maps, prepared after 1740, showing the Missouri River as well as the Assiniboine, Fort La Reine and other posts.*

Their way lay up the Ottawa that waterway that had been the recognized route to the west since its discovery by Champlain. They ascended the river past the Long Sault, scene of the heroic exploit of Daulac and his young comrades; past the Chaudière, sacred to generations of Indians; past Allumette Island, where the Algonquin chief Tessouat had contemptuously denounced Vignau to Champlain; over the swampy height of land to Lake Nipissing; and down French River to Georgian Bay. From there they followed the north shore of Lake Huron and St. Marys River to Sault Ste. Marie, where there had been a Jesuit Mission and a trading post for many years; and skirted the shore of Lake Superior until they came to what was afterwards to become famous as Grand Portage — one of three recognized water routes from Lake Superior to the west.

To La Vérendrye's indignation and disgust, the voyageurs who had followed him so far, now took it into their stupid heads to mutiny. They refused to accompany him into the unknown country that lay beyond. Finding it impossible to do anything with them, at any rate for the time being, the explorer sent La Jemeraye forward with a small party of picked men to build an advanced post, while he himself took the malcontents north to the mouth of the Kaministiquia, to spend the winter. La Jemeraye made his way from Grand Portage over the water route that other explorers and fur traders were to use for a hundred years, and that to-day forms the international

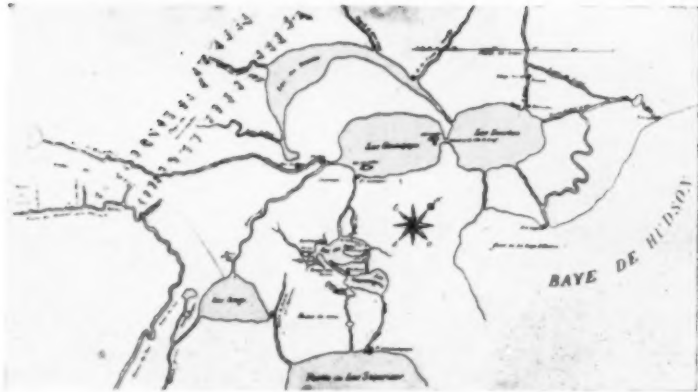
boundary between Canada and the United States. When he reached the point where Rainy River flows out of the lake of the same name, he thought it prudent to go no farther. He and his men set to work to build a small fort, which they named Fort St. Pierre. It stood in or near the present town of Fort Frances.

In the spring of 1732 La Vérendrye and his party followed the same route to Fort St. Pierre and, leaving a few men in charge, paddled down Rainy River to the Lake of the Woods. On the west side of that lake, in what was



*A chief of the Assiniboines, after a painting by Paul Kane.*

Map drawn by La Vérendrye about 1740. The curious bodies of water marked Lacs Ouinipigon and Lac Bourbon represent what is known to-day as Lake Winnipeg.



afterwards to become famous in diplomatic history as the North West Angle, they built Fort St. Charles. This became La Vérendrye's headquarters for several years, while he did his best to bring peace to the warring tribes, and matured his plans for further exploration. The site of Fort St. Charles was discovered a few years ago by a party of historical investigators from St. Boniface College, Manitoba.

His eldest son Jean was sent forward, with several men and an Indian guide, in 1733, to find what might be true of the stories of Ochagach and others as

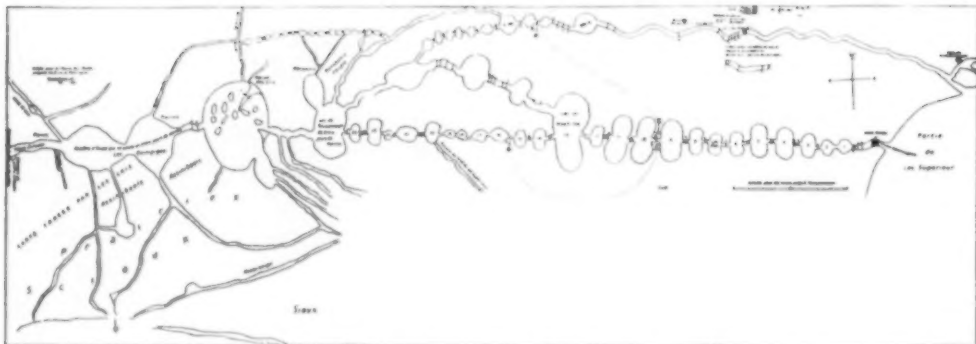
to rivers and lakes and strange tribes to the westward. Jean made his way down a small stream known to-day as the Roseau, to the Red River, and descended that river to Lake Winnipeg. Returning up Red River a short distance, he built a third post, which he named Fort Maurepas, after the Minister of the Colonies in France.

The years that followed were filled with sorrow and discouragement for La Vérendrye. La Jemeraye died from exposure during the severe winter of 1735, and the following year the explorer's son was murdered by the Sioux on an island in the Lake of the Woods. The Montreal merchants, on whom he had to rely for supplies, refused to send La Vérendrye any more goods, and he was compelled more than once to make the long journey down to Montreal to coax them into a more friendly frame of mind. His enemies in Quebec were industriously poisoning the mind of the King's representatives against the explorer. And to crown his misfortunes the bitter antagonism between the Sioux and the tribes friendly to La Vérendrye made it very difficult for him to make any progress with his western discoveries.

Nevertheless he stuck doggedly to his task. In 1736 he made his way west to the forks of the Red and Assiniboine Rivers and built a temporary post there which he named Fort Rouge. The name is to-day commemorated in a section of the city of Winnipeg. About this time Fort Maurepas was moved from the Red River to the foot of the Winnipeg River. From Fort Rouge



An Assiniboine chief, after the painting by Paul Kane.



*Map prepared by the Indian Ochagach for La Vérendrye*

La Vérendrye and his men ascended the Assiniboine to a point in or near the present city of Portage la Prairie, where he built Fort La Reine, named after the French Queen. His explorations, hampered though they were by the parsimony of the King, had now covered a large part of Southern Manitoba, and at Fort La Reine he held a strategic position for further discoveries. A short portage would take him to Lake

Manitoba, Lake Winnipegosis and the Saskatchewan, while in the other direction a journey over the plains would bring him to the Missouri. At this time, of course, he knew nothing, except what he may have learned from the Indians, of either of these great waterways, both of which led to the Rocky Mountains, but his mind was steadily set on the discovery of the Western Sea, and before he was through attempts would be made in both directions.

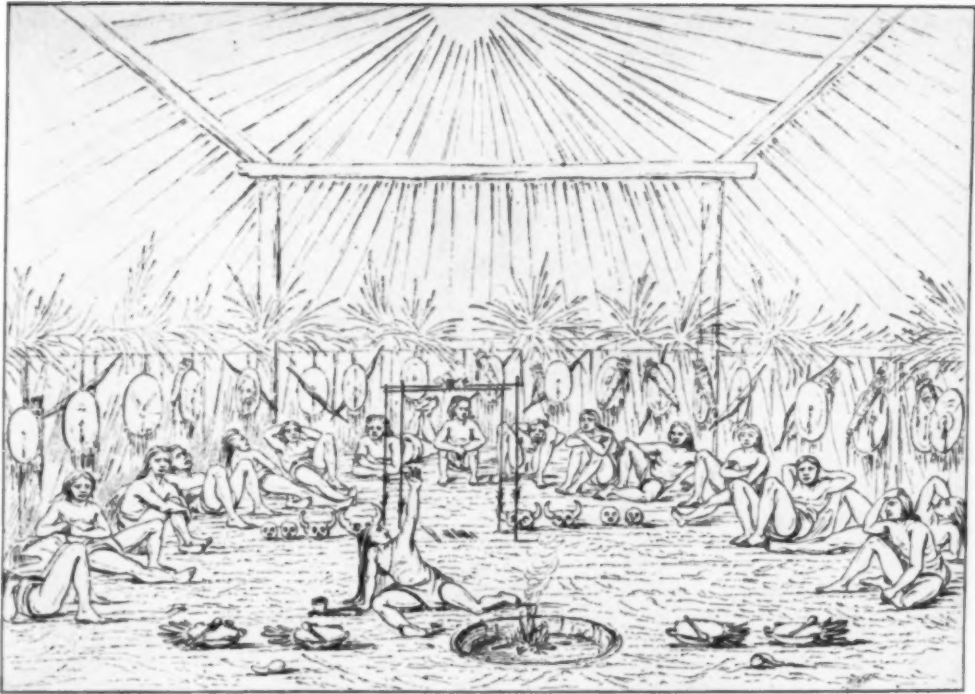


*A chief of the Mandans, from a drawing by George Callin.*



*Map prepared by La Vérendrye showing the extent of his discoveries in 1737.<sup>1</sup>*





*Interior of one of the tribal lodges of the Mandans. From a drawing by George Catlin.*



*A Mandan village on the banks of the Missouri, showing the curious circular lodges described by La Vérendrye. From a drawing by George Catlin.*



*Plate buried by La Vérendrye on the banks of the Missouri in 1743, and found by school children in 1913, at Pierre, South Dakota.*

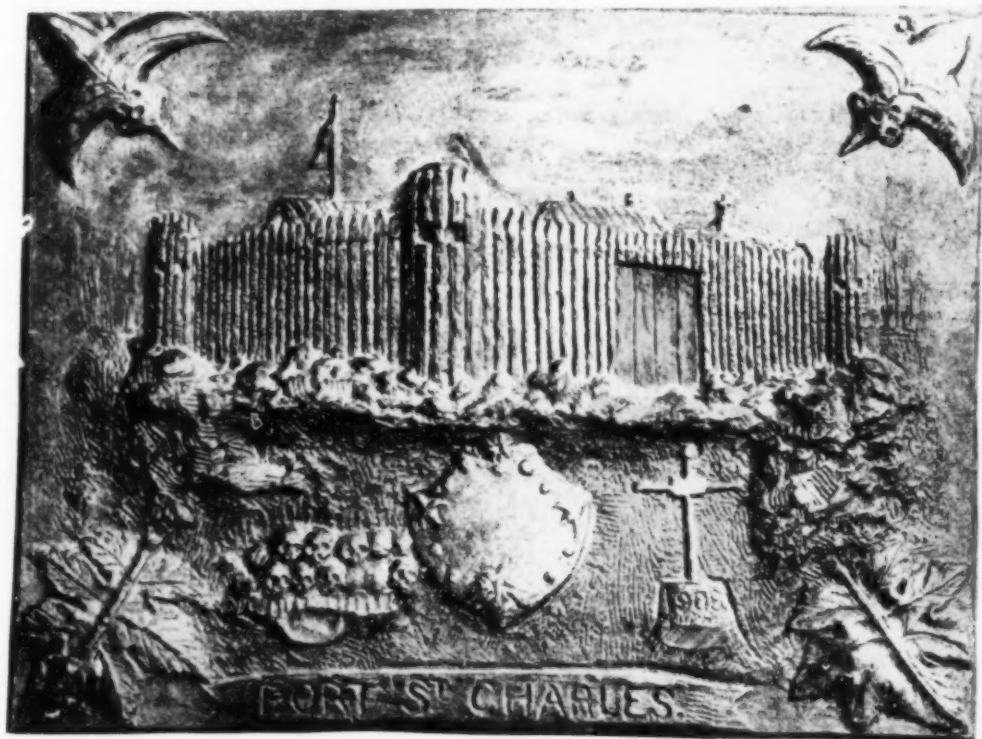


*Party of Indians travelling across the plains, with horse and dog travois. From a painting by Paul Kane.*





*Indian camp on the shore of Lake Huron. From a painting by Paul Kane.*



*Fort St. Charles, on the North West Angle of the Lake of the Woods. Reconstructed from plans and description.*

From Fort La Reine, he made a journey across the plains to the Mandan villages on the Missouri, being the first white man to visit this remarkable tribe. He had been hearing such extraordinary stories about the Mandans from the Chippewa and Cree that he was convinced he would find them to be some race of white people, from whom he could obtain reliable information as to the way to reach the Western Ocean. He was correspondingly disappointed to discover that they were merely Indians, though Indians who had developed a civilization of their own, lived in walled towns and cultivated maize, pumpkins and tobacco.

Nevertheless, a few years later, being unable to leave Fort La Reine himself, he sent two of his sons on an ambitious attempt to find the sea somewhere beyond the Missouri. The sons went to the Mandan villages, and from there set off toward the south-west. After visiting many hitherto unknown tribes, and experiencing many adventures, they finally became involved in a warlike expedition by friendly Indians against the Snakes or Cheyennes. They reluctantly accompanied the war-party because they had been assured that when the Snakes had been overcome, the way would be clear for them to the sea, which they were told was not very distant. This of course was very far from being the truth, as they were then, as far as it is possible to trace their journey, somewhere in the present state of Wyoming, in any event still a very long way from the Pacific. They were bitterly disappointed when the war party, filled with a sudden panic, abandoned their expedition and turned back, with the mountains, beyond which the explorers had hoped to find the long-sought sea, full in view.

On the return journey to the Mandan villages and Fort La Reine, the La Vérendryes buried a lead plate with an inscription taking possession of the country in the name of Louis XV. It had long been hoped by historians that this plate might be found, as it would fix at least one point in the expedition of 1742-43. In 1913, one hundred and seventy years after it was deposited, the plate was picked up by some school children playing about a sand-hill in the neighbourhood of Pierre, South Dakota.

Having failed to reach the sea toward the south-west, La Vérendrye tried the north-west. In 1741 he had built Fort Dauphin, near the southern end of Lake Winnipegosis; and some time afterward Fort Bourbon at the northern end of the same lake, and Fort Pasquia on the lower Saskatchewan. With these as his bases, he purposed making his way up the Saskatchewan, and did actually get as far as the Forks, but misfortunes were now crowding thick and fast upon him. He was forced to return to Quebec, and died there in 1749. His sons begged to be allowed to continue their father's explorations, but were curtly refused.

La Vérendrye failed in the definite object he had set before himself — the discovery of an overland route to the Pacific Ocean; but he accomplished something much more important. He was in a real sense the discoverer of Western Canada; first to descend the Winnipeg river; first to see Lake Winnipeg; first on the Red and the Assiniboine and the Saskatchewan, if we except the somewhat indefinite journey of Henry Kelsey; first to cross the great plains to the Missouri. Many years afterward English-speaking explorers were to reach the sea he had vainly sought, both by the Missouri and the Saskatchewan.



*Johannesburg from the air, with gold mine dumps in the distance.*

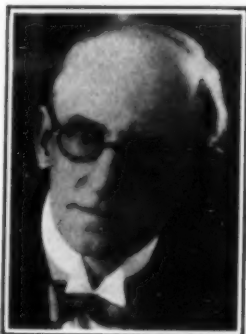


## Johannesburg the Golden

*By* HEDLEY A. CHILVERS

**E**ARLY in the 70s old Hans Breyten of Pretoria set out on a southward trek to the Orange Free State; and outspanned late one afternoon on the high wind-swept plateau called the Witwatersrand. To the south he saw marshes and dim blue hills, and away to the west long lines of shadowy mountains, like tidal waves frozen ere they reached the land.

Hans Breyten was less concerned with the majesty of wide spaces than with the abundance of tawny game, gleaming vividly everywhere in the long grass



Assistant Editor, Rand Daily Mail, Johannesburg. Born in Chelsea, England, he went to South Africa at the age of 22. He is the author of "Out of the Crucible," "The Seven Wonders of Southern Africa," "The Seven Lost Trails" and other works.

of the veld. And so, raising his gun, he presently fired at a buck outlined against a white rock.

The bullet—discharged at considerable range — felled the fragile creature, and the leaden missile emerged from its body to strike the rocky outcrop behind. It splintered the formation, so that there was revealed a cream-coloured understone with pebbles and stains of yellow in it.

Old Hans Breyten studied the chipped fragments that night by the light of his camp-fire. In the distance he heard the roaring of lions. He might also have



South African Railways photograph

*The headquarters of the Chamber of Mines, Johannesburg.*

seen, had he cared, many redgold filaments flickering on the black and distant hills,—veld fires licking up to the mountain tops. But he was preoccupied with the curious pudding stone with its saffron markings that he held in his hand.

"I shouldn't be surprised," he said, "if this contained gold, and if this Witwatersrand was a gold-field."

But when the yellow light of a new day began to fire the east, he heaved the stone into his waggon, and resumed his southward trek. The "field" which he thus abandoned has since added over 5,000 millions to the gold stocks of the world, and is believed to-day to contain as much gold again, as yet unmined.

It was Fred Struben who pioneered the great discovery. He traced the outcrops of various "reefs" for many miles through this wilderness, constantly finding gold in them, and he suffered much privation ere he vindicated his apparently extravagant theories. A young man, then, with a keen eye

for geological prospects, he dug holes in ravines, slept in baboon-infested bush, and even sold his gun at a distant store to pay his natives and buy his food.

"There is a vast gold-field here", he used to declare, "and one day it will provide work for many thousands".

An artisan whom he had employed to build him a shelter had the luck to stumble on the payable main reef. George Walker, the handyman, literally fell over it one day and his discovery created the greatest excitement. A rush of diggers set in from Kimberley. Hundreds of waggons made for the lonely Witwatersrand 35 miles south of Pretoria; and soon the rocky outcropping of the goldfield was pegged and dotted with tents for 60 miles; and Johannesburg, a veritable city of gold, for it was built on reefs of gold, and is sustained still mainly by its mighty gold industry, began to spread in all directions.

Johannesburg was actually born in 1886. In its comparatively brief life, it





*Johannesburg looking west towards Doornkop, where the Jameson raiders surrendered in 1896.*

has unfolded a vast manuscript of adventure, has shaped the destinies of great men, and in the wider field of politics has influenced those international conditions which lead to great wars. Indeed it may be asserted in strict truth that Johannesburg and its Uitlander problems not only precipitated the Anglo-Boer War of 1899-1902, but through Rhodes was a prime factor in causing Britain to abandon its policy of isolation in Europe, and to form coalitions with other powers. The fact that Britain, France, and Russia confronted the central powers at the outset of the Great War was to no small extent due primarily to Rhodes and King Edward. But Johannesburg, the city which grew up in the wilderness, inspired Rhodes with a belief in the need of these European alliances. And thus the city has exerted an uncanny influence on the course of the world's affairs.

The first camps at Johannesburg were grimy little centres of dust-storms and digger-activity. One was Ferreira's

camp; the other Natal camp, about a mile away. Past them drifted those northbound diggers from Kimberley who still had faith in the gold-fields at Barberton higher up; but this stream gradually came to a stop, and returned to the Witwatersrand.

Amongst the early ones to arrive on the Witwatersrand was J. B. Robinson, subsequently the South African millionaire and father of Countess Labia, who is to-day a leading Capetown philanthropist and patroness of art. Robinson was an immensely assertive, pushful character. He always took a lead. In Kimberley he made a fortune out of diamonds; and he has told the story of how when it was rumoured that the Kimberley Diamond Mines were petering out, he actually possessed a wash-basin full of the gems.

"I couldn't resist the temptation", he afterwards said, "of putting my hands in it and running my fingers through the diamonds as though I was washing my hands in this mass of glittering gems".

"J.B." as he became widely known, was indeed destined presently to wash



*The late Mr. George Walker, the handyman whose accidental discovery of the main reef leader followed Mr. Fred Struben's exploitation in 1884-6 of the great Witwatersrand gold series, the biggest gold occurrence in the world.*

his hands largely of diamonds, for a day or two later—in July, 1886—he received a telegram. It ran as follows: "A discovery made about 35 miles from Pretoria of conglomerate shedding gold. Think it worth your while to come up to see it".

Robinson came up. He hurriedly left the coach at Potchefstroom, secured a waggon and mules, and drove at full speed towards the Witwatersrand. Presently he found himself on the farm Langlaagte, where Walker, the handyman, had stumbled on the main reef. And while Walker was tramping the country trying in his futile way to raise funds to work it, "J. B." stepped in, ingratiated himself with the plump widow in the sun-bonnet who owned the farm, and leased the place from her for a year with the right to purchase at any time within that period for \$30,000. He also secured a half share in what is now the Robinson property for \$5,000.

Out of these two purchases alone has resulted to date a gold output of some \$300,000,000 or more.

And yet, as J. B. once wrote, "My purchase of Langlaagte for \$30,000 and the half of Robinson Mine for \$5,000, afforded a considerable amount of amusement to the inhabitants of Pretoria. They used to say that I intended to grow cabbages on these properties, and pointed out that there wasn't much of a



*On top of gold dump near Johannesburg. These dumps are in many cases leased to contractors who are applying new methods for the extraction of gold from dump residues.*



market for those cabbages. Moreover the former owner of the Robinson Mine was so elated at the idea of selling half his property for \$5,000 that he insisted that I should join him and his friends in a bottle of champagne. I noticed that in toasting the success of my venture, they all winked slyly at one another, and their winks ultimately culminated in a roar of laughter at my expense."

But the "cabbage garden" investments stood a few years later at no less a sum than \$90,000,000, and as already indicated have produced at least \$300,000,000 or more.

President Kruger, drinking endless cups of coffee on his stoep, was by no means certain that he liked these foreigners (Uitlanders) who had flocked to this upland on the essentially pastoral Transvaal. Seated there with his long churchwarden pipe, surrounded by clouds of tobacco smoke and by doubting burghers, he gravely commented on the views expressed. Here he felt was a community of godless folk who played cards on the Sabbath, shot guns at the clouds to bring down rain—in impious defiance of the Almighty—and went to church far less than they ought. On the other hand they were paying his burghers big sums for negligible bits of land and were producing gold from the ground



*The late Mrs. George Walker, widow of the handyman who stumbled on the outcrop of the great Witwatersrand Main Reef in 1886. Mrs. Walker was living at Krugersdorp, 20 miles to the west of Johannesburg at the time of her death.*



*The Institute of Medical Research, Johannesburg, where notable investigations into tropical and other diseases are carried on under the general superintendence of Dr. Spencer Lister.*

with the skill of necromancers. In the Transvaal, more or less bankrupt, they would have to be suffered, and (thought the Grand Old Man) must be given a square deal.

One day, Cecil Rhodes happened along with J. B. Robinson and other deputationists, and the President met them all at his door, and led them to the end of a large sitting room. "Sit down", he said brusquely in Dutch. The President filled his pipe and began smoking. For a time there was silence. His Honour pushed back the front brim of his black beaver, which he wore throughout the interview, and remained thus puffing at his pipe, and staring stolidly at the opposite wall. Rhodes, he knew, was an important figure who had hewn his way successfully to wealth and eminence; and he realised that Rhodes had come to ascertain what the President was prepared to do for the new fields. It was a meeting of giants, each determined to get what he wanted even if empires had to fall.

As "J. B." said afterwards: "Rhodes spoke well at this interview, but with a lack of diplomacy which boded no good for the future relations between the two men. He gave a striking illustration of his inability to understand at that time Kruger's unyielding character. When Rhodes had finished, the President leaned forward, and pointing the stem of his pipe at him, said in Dutch: 'Tell him I have heard all these stories before. I am here to protect my burghers as well as the Rand people. I know what I have to do and I will do what I consider right'."

That ended the interview. Kruger, who tried to extend his Transvaal territory East and West across Africa, was ultimately defeated by Rhodes, who succeeded in penetrating the barrier and pushing a British line of territory from the southern Cape towards Cairo. The ambitions of the two men thus literally crossed, and the cross on the map of Africa symbolised the welter of war and suffering through which South Africa



South African Railways photograph.

*Lions flourish in the Johannesburg Zoo. An open-air den in which an attempt has been made to reproduce the usual rocky refuge of the king of beasts.*



South African Railways photograph.

*The Corner House, Johannesburg. The headquarters of important mining groups and financial houses.*

had to pass before the issue—whether the will of Rhodes or that of Kruger should prevail—was decided. The Uitlanders who had rushed to the new goldfields, eventually had to pay most of the taxes of the Transvaal, but were refused the vote by Kruger, who feared lest they should swamp his burghers. This led to

the Jameson raid of 1896, by which “Dr. Jim” (in loose association with Rhodes) crossed the Transvaal border with Rhodesian police and troops, and suffered defeat by the Boers at Doornkop, a rocky spot near Rodepoort on the line of the Rand gold-fields. This led ultimately to the Anglo-Boer war of 1899,



*Market day in Johannesburg. This site is now occupied by an imposing City Hall.*

and, as already suggested, helped to shape the European alliances (notably that of Britain, France and Russia) which fought the central powers in August, 1914.

For several years after the discovery of the gold-fields in 1886, diggers and others drove to them by coach: for the railway had not been built. Johannesburg, indeed, was already a considerable city when the railways came to it. On September 15th, 1892, the city was linked with the Cape Colony; on October 20th, 1894, it was joined with Delagoa Bay (Mozambique), and on December 15th, 1895, the first train came through from Durban (Natal). So that the diggers had reason to be proud of their great achievement in having already transported across 250 miles of roads from Kimberley, the building material

for the city and the shaft equipment for the gold mines.

Sometimes as the raw gold was removed to the railhead the coach would be held up by highwaymen. There was a case, indeed, where robbers fired at the coach horses—one of which dropped and bunched the team,—and in the confusion they then removed a large quantity of raw gold. They were never found.

On the whole, however, the roads were singularly free from lawlessness. The incoming coaches drew up on the lower end of the market square; which was usually crowded with ox-waggons. One day the story got about that a nugget of gold had been picked out of a small area on the square. Newspaper boys thereupon rushed the spot and dug there frantically. Most of them unearthed bits of yellow metal. But this proved



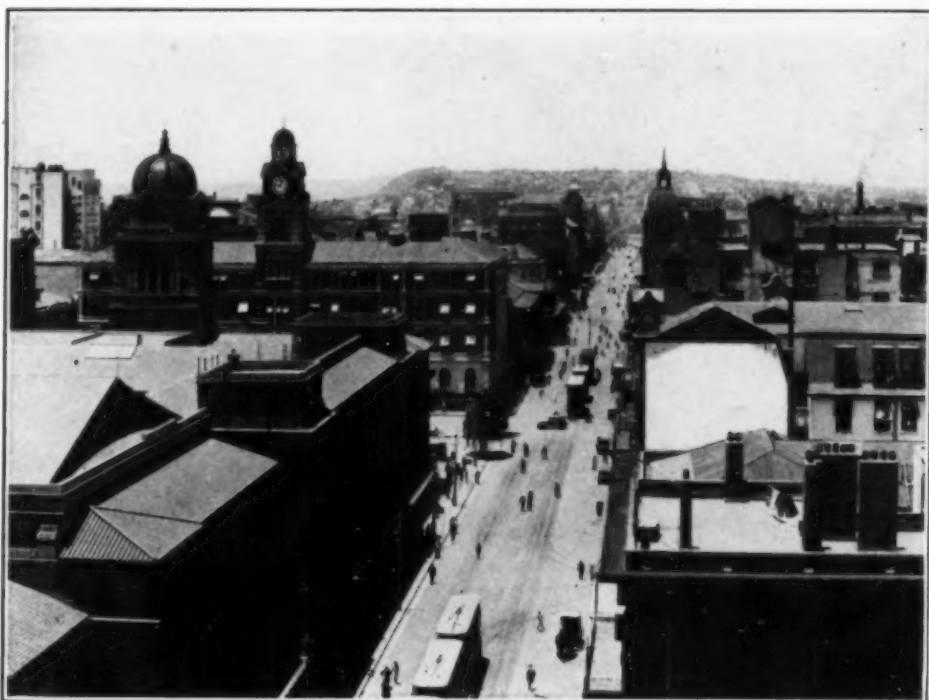
to be brass—to the great amusement of the spectators! It is a fact, nevertheless, that a gold reef worked in the early days of Carl and Julius Jeppe—runs under the imposing grey New Law Courts on Von Brandis Square in the heart of Johannesburg.

By 1896—the year of the Jameson Raid—the Rand goldfields extended east and west from Randfontein to Springs. Viewed from above, their lines of cyanide dumps must have resembled a long, greyish chain with Johannesburg as a huge watch in the middle. Churches of all denominations had sprung up; the gold reef had been proved at depth, and seemed to be continuous; social life was unconventional and gay; sport, and particularly racing, was popular; and Mrs. Dale Lace, a local society leader who always wore a monocle, began to reveal a zest for the spectacular by driving through town in a smart coach drawn by prancing horses to the accompaniment of a postilion's horn.

The year 1896, however, was disastrous for the "fields", in that the grie-

vances of the Uitlanders and particularly their inability to get the vote, led to the Reform Plot and to Dr. Jameson's incursion over the Transvaal border, Jameson asserting that he was going to the assistance of Johannesburg. It all culminated in the arrest and imprisonment of leading men of Johannesburg who were suspected by the Kruger Government of complicity in the raid.

Then there was a frightful explosion at Braamfontein early in 1896, an eastern suburb of Johannesburg, which destroyed an appreciable portion of the district. Two trucks filled with dynamite detonated, flattened the surrounding houses of corrugated iron, and killed many people. President Kruger, hearing of the catastrophe, came over from Pretoria (35 miles away). Amongst many dreadful sights he saw the bodies of two little girls, white and unmarked, lying side by side. The rugged old man stood gazing at them for some moments deeply moved. Then he thundered: "Whoever is responsible for this, shall pay for it, to the uttermost farthing!"



South African Railways photograph.

*Johannesburg. Market street looking towards Jeppetown, the site of an early diggers' camp.*



*The late Mr. Fred Struben, whose remarkable pioneer work on the Rand conglomerates in 1884-6 paved the way for the ultimate discovery of the world's greatest gold-field.*

When the Anglo-Boer War broke out in 1899, a frantic rush of refugees ensued from Johannesburg. The outgoing trains were crowded, and even the roofs of the carriages bore anxious fugitives. One

leading citizen who was wanted by the Republican police, escaped to the Natal border disguised as a black woman. Then gradually the gold mines shut down, only a few being worked by the Republicans to finance the campaign. Grass grew in the streets of the city. At night, instead of the familiar roar of the mine batteries, there was the clatter of passing commandoes. And when after some months Lord Roberts began his march on Johannesburg, the Republicans in Pretoria saw that the war was lost, and began to threaten the destruction of the mines; indeed a commando set out under a certain embittered ex-judge, with the intention of blowing up mine shafts in the central Johannesburg area.

Dr. F. E. T. Krause, the Republican Commandant of Johannesburg, managed by a subterfuge to entrap the man in a room, and to persuade his unsuspecting followers to gallop off on another mission; and he thus saved the mines. Dr. Krause also despatched roughly \$2,500,000 worth of raw gold by night from Johannesburg to President Kruger



*South African Rail ways photograph.*

*The world-famous Rand Club, Johannesburg.*



who was just then escaping from Pretoria to Lourenco Marques. Doubts as to the ultimate fate of this gold, as well as of other bullion and coin known to have accompanied the President's coach towards the coast, have since given rise to what has come to be known as "The Kruger Millions Mystery."

Lord Roberts captured the town on May 27th, 1900.

After the Anglo-Boer war, the mining authorities experienced the utmost difficulty in reassembling an adequate native labour force on the mines. The old skilled workers had scattered, and could not be brought back. The upshot of this was that the mining authorities decided to secure Chinese labour; and they urged the matter strenuously in the Transvaal Parliament. Although they won the day, the decision to import an army of Chinese to the Rand resulted in angry protests to Downing street from all parts of the Empire. In spite of this the Chinese Labour Convention was signed in London on May 13th, 1904,



*Molten gold being poured into mould.*

and the first batch of coolies reached Johannesburg on June 22nd, 1904.

The Chinese with their blue smocks, pigtails, shaven heads, and high-pitched voices soon became a familiar spectacle



*South African Railways photograph.*

*Weighing bricks of solid gold. A significant tribute to the Rand's ceaseless contribution to the gold stocks of the world.*



South African Railways photograph.

*Seven thousand feet down. At the bottom of the Village deep mine, Johannesburg.*

in the streets of the city. They were treated with marked consideration and kindness by the mining authorities, and their mentality, superstitions, and festivals were studied in all routine arrangements. On their side they raised the output of gold, and by degrees restored prosperity to fields which had suffered cruelly since the Anglo-Boer War through the lack of native mine labour. Nevertheless, their crimes soon became so numerous that the Government decided to arm all farmers in the vicinity of the mines.

The coolies were vengeful if they deemed themselves to have been victimized. A certain case in 1907 in which a compound coo'ie and a Russian storekeeper on the goldfields were concerned illustrates this clearly. The coolie entered a store belonging to one Notolowitz, who worked there with his son. He made a small purchase, and claimed to have tendered a half-sovereign. The

storekeeper gave him change for sixpence; and a bitter argument ensued. Whether a sixpence or a half sovereign had been tendered remains a mystery, but the Chinaman certainly left the store violently incensed and vowing vengeance. After nightfall, father and son put up the shutters and retired to bed. Close by was the compound where worked the coolie who had disputed the change; and doubtless the little old storekeeper (who wore a little black beard and had a poor command of English) had wondered as he lay abed if the Chinaman would carry out his threats. He was not left long in doubt; for presently there was a frightful explosion and father and son were literally blown through the roof. The store was almost demolished. The detective who assumed control of the case, soon found a clue. Crawling under the ruined store which had been built on piles, he presently discovered a button of



South African Railways photograph.

*First house built by the digger community at Johannesburg about 1887. It was destroyed by the heavy rains of December, 1891. The house stood on the City and Suburban townships lands. Painted by Mr. J. W. George and presented by him to the Rand Pioneers, September 26th, 1903.*

the kind worn on a coolie's blouse; and straightway went to the compound, called for a parade of the oriental workers, and found the blouse from which the button had been torn by the coolie forcing himself under the store to lay the dynamite charge. The man was arrested, identified by the storekeeper, and convicted. The elder Notolowitz recovered entirely; his son was permanently injured.

Thus would a Chinese "coolie" exact revenge for a slight, fancied or real. Indeed when the Chinaman resolved on revenge, he generally revenged himself thoroughly.

The Chinese labour force came to the Rand in 1904. By 1910 every man had been repatriated. But with their departure came general agreement that in spite of their crimes they had restored the prosperity of the goldfields.

As time passed the gold industry began to feel still more the burden of its labour problems. Employers and employes sometimes found themselves at loggerheads. The trade union movement went ahead. Then came the three great mining crises of 1907, 1913-14, and 1922. Each was more dramatic than its predecessor; each more sanguinary.

The 1907 trouble broke out as a result of a dispute on a question of mine drills and contract conditions. The miners fought the mining houses bitterly. Some of their leaders, notably Tom Matthews, were resolute but honest men who in their endeavours to bring out the whole of the mine workers, resorted to strong measures.

The 1907 strike was eventually broken and the men drifted back to work. But a more terrible conflict was destined to



*Cavity made by explosion of 50 tons of mining dynamite at Braamfontein, Johannesburg on Feb. 19th, 1896.*



*South African Railways photograph.  
The Johannesburg stock exchange where many fortunes have been won and lost.*

break out in June, 1913, as the result of a dispute on the New Kleinfontein Mine which led to a great riot on the Market Square, Johannesburg, and to several days of arson, and fighting in which Imperial troops were freely used.

When the disorders were at their height, Generals Botha and Smuts intervened. They met Tom Matthews and other leaders in the vestibule of the Carlton Hotel, and the strike was called off. In 1914 a subsequent attempt to declare a general strike was frustrated by an overnight declaration of martial law.

The last dramatic phase of this affair will not readily be forgotten. Armed burghers from the countryside had been called to Johannesburg to assist in quelling the disturbances. The strike leaders were penned within the old Trades Hall, having refused to surrender. Commissioner Street was filled with armed troops, preceded by a small cannon which had been trained on the

Trades Hall, with the threat that unless the inmates surrendered, the place would be shelled. Shortly before the expiration of the time limit, the occupants capitulated. They were marched away under arrest to the Marshall Square Police Depot. And for a while peace prevailed.

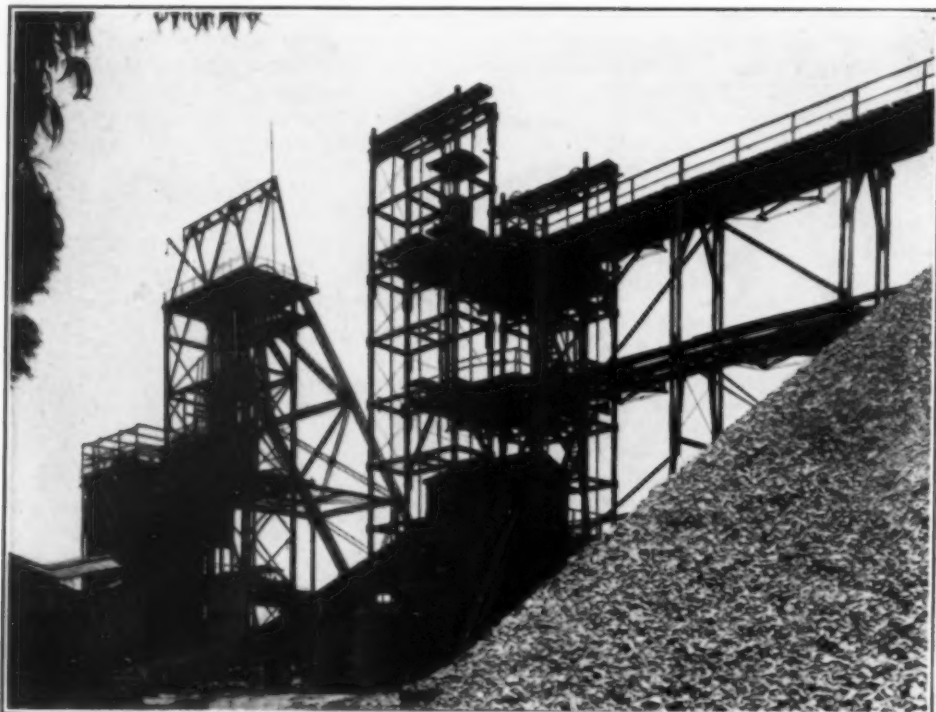
The great 1922 revolt was of economic origin, the mining houses being faced with strong opposition when they found themselves compelled to reduce wages after a period of deflation. A great strike was declared, the communists got control, the strikers drilled on military lines, and eventually tried to seize the town. General Smuts managed to dash into the city through their lines in a car which was fired at as he passed. He drove on to the Drill Hall, assumed control, and with the arrival of fresh troops, and the use of aeroplanes, artillery and tanks, defeated the revolutionaries and restored orderly Government. The last episode in this class conflict, the final assault on the rebel's stronghold in Johannesburg, was



South African Railways photograph

*Grandstand, Turffontein racecourse.*





South African Railways photograph.

*Great shaft of the Crown Mines, to-day the largest gold mine in the world. It has milled over 50,000,000 tons of rock since the gold reef was discovered. The mine occupies a wide area in western central Johannesburg.*

dramatic and tragical. Two of the guiding spirits—Fisher and Spendif—committed suicide in a room overlooking the advancing government troops.

To-day, after 44 years, the mining industry is at its zenith. It has an annual output in excess of \$200,000,000 out of an annual world production of \$400,000,000. Capital amounting to \$3,150,000,000 is estimated to have been sunk into the Reef. The industry employs 22,000 whites and 200,000 natives. Its output to date exceeds \$5,000,000,000 and its organization is claimed to be finer than that of any other gold or coalmining industry in the world.

The city and reef house to-day 250,000 whites and as many more blacks;

it boasts a university on 82 acres of ground which has 1,300 students striving towards graduation in arts, science, medicine, engineering, commerce, and law; its agricultural show (which had a recent attendance of 140,000) is one of the biggest south of the line; and its Chamber of Mines helps to co-ordinate and secure the interests of the various mining houses.

Thus from small beginnings, from the thoughts of a lonely prospector, from an unpretentious little camp in Ferreira's town, has sprung an industry which has not only proved the life-blood of the Union of South Africa, but has added such quantities of gold to the earth's stocks as to have exerted an appreciable influence on international commodity prices.

# Indian Handicrafts of Algoma

By MABEL CREWS RINGLAND

WHEN one sees the array of Indian knick-knacks and other souvenirs displayed for sale in a curio shop or at an Indian village, it is difficult to imagine that the makers of these trifles belong to a race which has produced handicrafts of real beauty and designs of enduring significance.

Before their arts and crafts came under the influence of the white man's "culture" and their originality was stifled by a desire to conform to his standards, every tribe had its distinctive handicrafts and patterns, and the Ojibwas of Algoma were no exception. In their very name, meaning "puckered up," we find a reference to a distinctive tribal characteristic of their handicrafts, the way their moccasins were at one time made with a puckered seam up the front.

It is interesting to follow the development of their decorative arts from the simplest forms of earliest times to the more complex and sophisticated expressions of to-day. Many who think of Indian art only in terms of the souvenir shops will be surprised at the original and novel uses developed by the characteristic aesthetic sense of a few genuine artists in out-of-the-way spots of this rugged and colourful hinterland.

While the Ojibwa Indians, known also by the larger tribal name of Chipewas, have from time immemorial occupied a vast wooded wilderness a thousand miles wide, extending around the Great Lakes to the Turtle Mountains of Manitoba, it is in the district of Algoma in northern Ontario, the country north of Lakes Superior and Huron, that this study has been made. Though a large and powerful tribe, and one of the most cultured and picturesque in Canada, the



MABEL CREWS RINGLAND

is a Toronto journalist and lecturer with a flair for the unusual and picturesque. A passion for travel has led her into many quaint and little known parts of the Dominion and induced an intensive study of Canadian folk lore, primitive handicrafts and folk life in general. She is a member of the University of Toronto Senate.

Ojibwas were too remote to figure in the early colonial wars; hence records and information regarding them are scant and scattered through government memoirs and ethnological reports.

One finds this tribe today a sturdy remnant of a great savage people, some following the monotonous, drab routine of the reservation, almost but never fully adapted to the white man's ways; some in remote little villages on Lake Superior, still leading the nomad life they love, hunting, trapping, and guiding, a profession at which they excel. But all still treasure secretly and rather wistfully, beneath a reticent exterior, the traditions of a glorious

past, days of the war paint and the wampum, the tepee and the tomahawk, of tribal legends and folk-lore which are inextricably interwoven with their arts and crafts. Patient, tactful study is needed to unearth the significant details, which is not so easy when the primary objective of one's northern adventure into this virgin lakeland is fish, not facts.

The earliest forms of handicrafts practiced by these Indians were designed for utility and were executed largely by the men, with the women's assistance — the making of bows and arrows, arrow-heads, stone tools, nettle-stalk twine for fish nets and other purposes, birchbark canoes, toboggans and snowshoes, and the tanning of hides, chiefly deerskins, which was done by the women. Many useful articles are still made in the primitive way, carved by hand — wooden spoons and ladles, bowls, hand-hewn wooden snowshoes of cedar for emergency use in the bush, and so on. A group of wooden articles in our amateur collection is shown in one of the photographs; outstanding is a violin, hand-made by an



Canadian Pacific Railway photograph.

*An Ojibwa maiden who played the role of Minnehaha in the Hiawatha Pageant at Desbarats, in her attractive native costume — fringed deerskin dress with raised bead decoration, shoulder ornaments of woven beadwork in butterfly design, beaded and fringed bag, bone and shell necklaces, and solidly beaded leggings and moccasins. She is seated on a hand-woven mat of cedar bark.*

old Ojibwa<sup>1</sup> chief, that is a marvel of ingenuity.

Personal adornment was at first restricted to the use of materials provided by nature, ingeniously combined and strung on sinews as necklaces; scarlet berries, animal and bird bones, bear

claws, fish vertebrae, shells and the like. Later, as skill in the use of tools developed and the struggle for a mere existence became less arduous, the Indians had more time to devote to artistic expression, and decorative arts evolved. Frances Densmore, in Bulletin 86, Bureau of



Canadian Pacific Railway photograph.

*Hiawatha, leading character in the Hiawatha Pageant, in the garb of a young brave of the tribe — fringed deerskin jacket, head-dress of eagle feathers with beaded fillet, shoulder and chest ornaments in interesting though simple designs, bandoleer and heavily beaded leggings in geometric designs with serrated border. Note the double-curve motif in the moccasin beading.*

American Ethnology, Washington, has done a distinctive piece of work in her exhaustive study of the Chippewa In-

dians of Minnesota and a portion of Ontario, over a period of many years, in having recalled by some of the older



*Hand-carved articles collected by the writer in Algoma. (a) Wooden snowshoes for emergency use showing underside (left) and upper (right). (b) Violin skilfully fashioned by an Indian. It has strings of deer sinew and thumb screws for tightening them. (c) Wooden spoon or ladle with rounded tip on underside of handle to prevent it slipping down into the pot.*

craftswomen still living, the ancient forms of their tribal art, before they vanish forever.

While each tribe doubtless has its treasured relics of ceremonial attire and other fine examples of their handicrafts which seldom see the light of day, a fine display of native costumes and decoration was presented some time ago near Desbarats, on Lake Huron, when an out-

door pageant based on "The Song of Hiawatha" was given by Ojibwa Indians on a floating stage from which could be seen the island where Longfellow is said to have lived when he wrote the poem. The whole district of Algoma is steeped in Hiawatha lore and the Indians delight in reproducing scenes from the life of the great Peacemaker, who is their legendary hero and who, according





Pringle and Booth Photograph.

Fine examples of Ojibwa beadwork on exhibit in the Royal Ontario Museum, Toronto, (a) A heavily beaded ceremonial belt in geometric design applied on red flannel. (b) A pair of three-inch wide fancy armlets in woven beadwork in the design of a divided eight-point star. The yarn fringe is braided part way as is the custom. (c) Elaborate beaded bag 12 inches square, with fringe in butterfly design woven all in one piece. Secured 50 years ago. The design shows a characteristic combination of the conventional wild rose and buds with lines and angular figures. Such a bag or bandoleer was worn on festive or ceremonial occasions, usually suspended from a beaded shoulder strap mounted on red flannel. (d) Deer-skin firebag with solidly beaded square in the overlaid stitch, and simple bead edging characteristic of old pieces. The three-petal leaf-like motif is a popular Indian floral design not exclusive to the Ojibwas.



*Hunters in Winter, shows an original flair for design as well as colour. Two Ojibwa hunters go forth on snowshoes in orange, red and brown costumes, while up a tree in the foreground climbs a squirrel.*

to tradition, once roamed these shores, bringing untold blessings to his tribe.

In tracing the development of design amongst these peoples, it is interesting to observe to what extent their art was influenced by their woodland environment to which they were responsive in

a degree scarcely comprehensible to civilized man, and by their religion as well. Many designs which appear to be purely formal are doubtless symbolic of tepees and trees, birds and beasts and the forces of the universe. The place of symbolism and sympathetic magic in primitive art of this type is discussed by



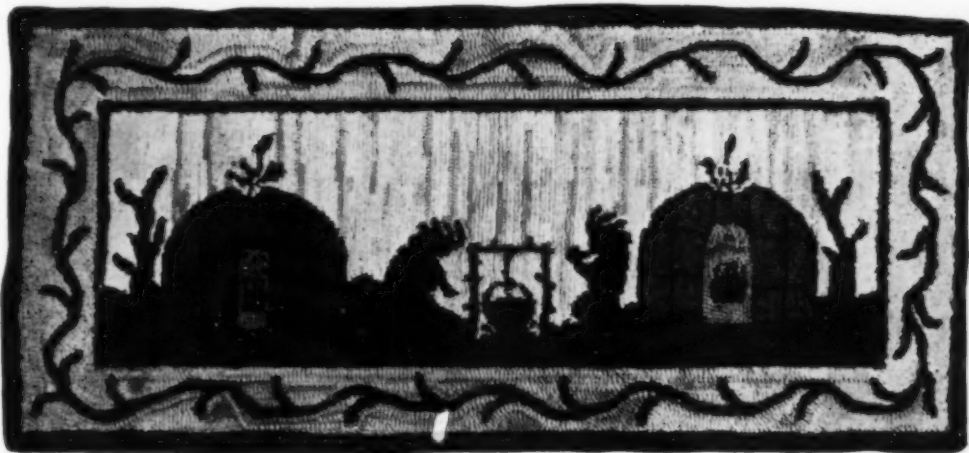
*The Great Bear, terror of the nations in Hiawatha's day, stands against a white ground, bulky and brown, framed in an Oriental-like border of softly blending colours that is suggestive of beadwork.*

Dr Boas in "Primitive Art" and by Haddon in "Evolution in Art." While designs with a meaning continued to be used after the coming of Europeans, their ancient significance was gradually lost as the workers began to imitate and value the designs of the traders' cheap calico, lace and ornaments of various sorts. Since 1860 the modern influence has been in evidence and many workers have forsaken the fine old designs in favour of more civilized patterns of doubtful artistic value.

Another profound influence on the art of the Ojibwas is traceable to their

custom has not entirely disappeared among the Chippewas and many of the old designs which originated in this way have persisted through generations down to the present.

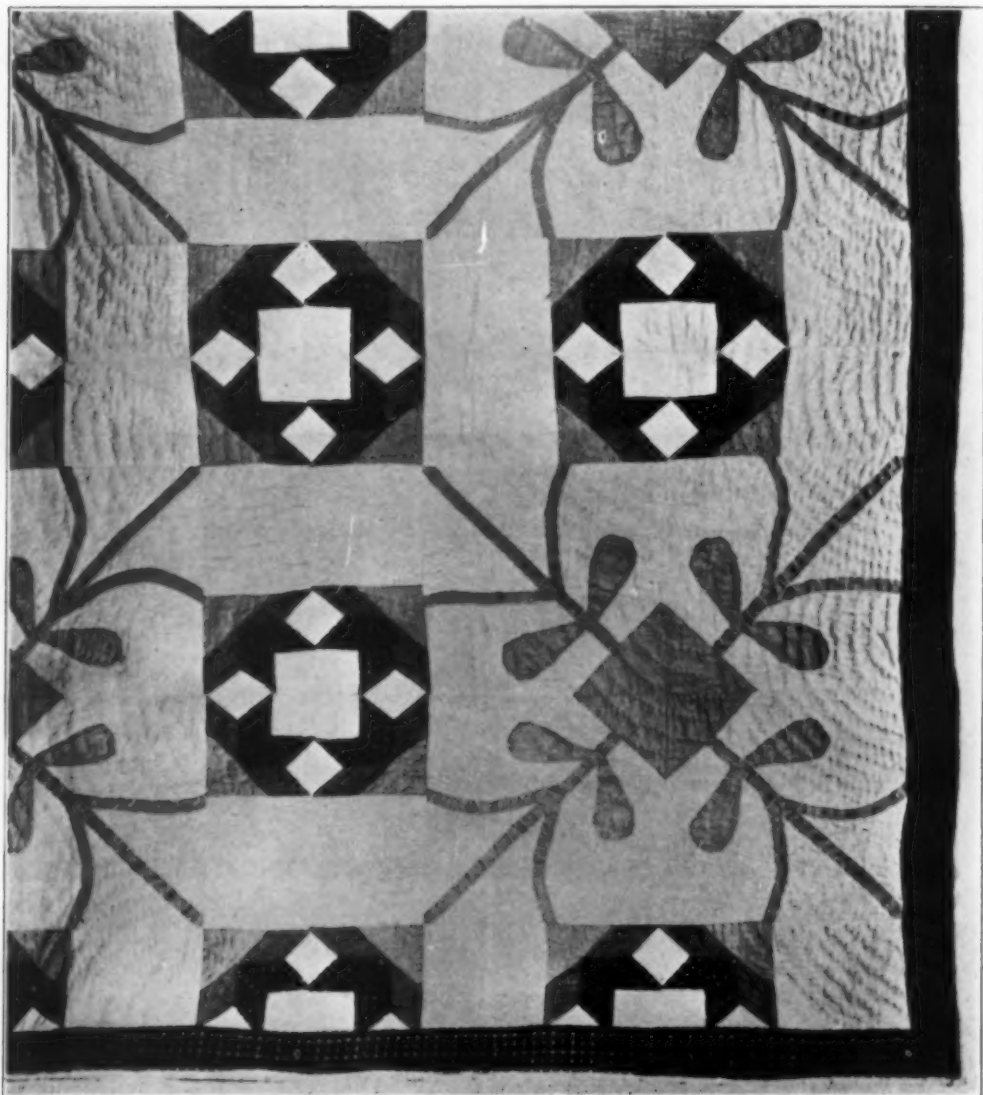
Largely because of their effectiveness and simplicity a variety of designs of considerable antiquity have been preserved by the Ojibwas and are still in use to-day. Notable amongst them are the simplest forms of their early decorative art—curves, circles, zig-zag or wavy lines and dottings, interlacing and parallel lines, squares, diamonds, hearts, crosses and the like. Curves



*Evening in Camp. A picturesque Indian rug featuring the old-style bark tepees with fire inside, used long ago. By a central fire and caldron sit two feather-decked chiefs smoking their pipes. Distinctive use of black and white, with reserved colour notes.*

philosophy of dreams. Great significance was attached to the activities of the brain during sleep, for through them, the Indians believed, came their wisdom and knowledge. The main theme of a dream was often reproduced in either realistic or symbolic form, in a drawing or painting or in beadwork, and from this the owner was thought to receive special guidance, strength and protection. A man would tell his wife what design he wanted worked on his belongings, but he alone would know the significance of the motif. A popular form was in strips of woven beadwork to be worn around the head or neck, though a dream pattern might be a mere outline of beads, a crude picture painted on a blanket or wigwam or on a piece of cloth. This

are specially interesting, for according to Dr Speck a certain double-curve or bracelet-like form of decorative design which lent itself to infinite variations and combinations was found to be the dominant motif in the art of the eastern and maritime tribes of Canada, though elsewhere it occurred rarely and only in modified form. One comes across a few examples of a certain variant of this double-curve motif in Ojibwa beadwork and etched birchbark, as in the pattern on Hiawatha's moccasin in one of the photographs. But one is forced to conclude with Dr. Speck, in his memoir 42, Department of Mines, Ottawa, that among the Ojibway the double-curve is subordinate to floral designs, although one finds everywhere



*A neatly made patchwork quilt done by an Indian woman. Pink, blue and black patches are applied on a white ground.*

the influence of the early geometric forms.

The most frequently-used geometric designs are the star (formerly an eight-pointed figure) and diamond, the butterfly, figures with serrated borders and various forms of the wild rose which grows in profusion in Algoma. In early work this conventionalized rose was frequently combined with the straight lines and angular shapes of geometric designs as in the beaded bag illustrated. So

popular has this wild rose design become in their decorative art in many forms that the "Ojibwa flower design" has become noted. Modern versions of the popular rose theme, as shown in another example, tend to a more realistic floral presentation which lacks the artistic charm and sophistication of the earlier forms.

Arbitrarily, we may divide the designs of this district into four classes all of more or less symbolic value: simple





*Ojibwa woman with hooked rug in process. Taken by the author in a remote village on the shore of Lake Superior.*

basic forms; geometric designs; floral designs; realistic designs.

When French explorers first encountered the Ojibwa Indians 300 years ago on the site of Sault Ste. Marie at their sacred shrine, the St. Mary's Rapids, and nicknamed them Saulteurs

or "People of the Rapids," they found amongst the natives artistic handicrafts that amazed them. Prominent amongst these was porcupine quill-work which undoubtedly antedated beadwork, for even at that early period complicated techniques were so widespread and

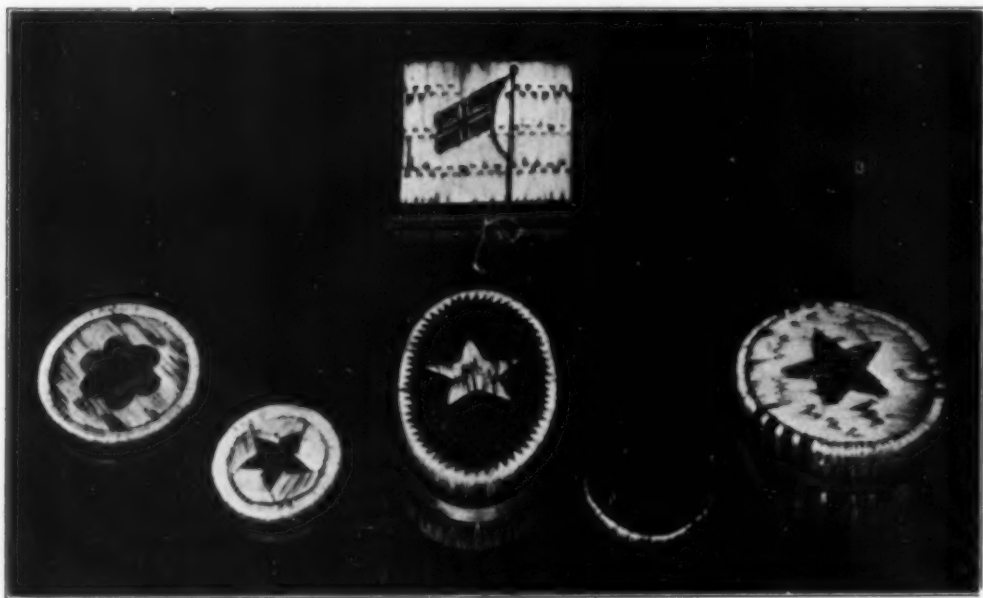


perfect as to presuppose years of practice before the advent of the white man. As porcupines were plentiful throughout Algoma and still are, the art has enjoyed an immense popularity that has continued even to the present day when quills are scarce in other localities and the quill embroidery a lost art.

Some of the old work on leather garments, moccasins, bags and ornaments in which the quills were flattened and sewn with deer sinew, Orchard, in his

Lovely quill-work is still done to-day on boxes with quite intricate all-over decoration, but it is a much simpler craft. The modern work is applied on birchbark and entirely without sewing. Holes are made with an awl and the quills inserted, unflattened, after which the bark contracts and holds the quills tight.

It is not to be wondered at that, with the advent of trade beads, the native craftsmen developed an easier technique of decorative art than quill-work, for beads required no laborious prepara-



*Quillwork bark boxes in a variety of shapes and sizes. The only tool used is an awl; the bark contracting holds the quills firmly in place. This is a much simpler technique than that practised by the Ojibwa women 100 years ago.*

"Technique of Porcupine Quill Decoration Among North American Indians," describes as beautiful, the elaborate foldings and ingenious stitches producing seemingly-impossible effects for such a stiff and stereotyped medium. Quills were used in the natural colours, brown and white, and coloured gaily with plant and root dyes. Moose hair was and still is sometimes combined with the quills, and being hollow, pliant hair which takes on delicate hues in dyeing, it lends itself to embroidery work. Sweet grass and coloured grasses were also used in combination with quills and required little preparation.

tion and allowed of more flexibility of design. Our original Canadians were no exception to the general run of aborigines in other lands who kept the glass bead industry of Venice flourishing and accepted beads as a medium of exchange, one pound (four or five bunches) being worth in Upper Canada, "one made beaver," value 50 cents.

At first, when beads were at a premium, designs were merely outlined in them; then, as they became more plentiful, a double line was used, this method persisting for many years. Just when the modern method of filling in the whole design with all-over beadwork

originated is not known, but some skillful techniques have evolved and, as Orchard says, in "Beads and Beadwork of the American Indian," "The American Indians developed an art which has nowhere been surpassed."

Two types of beading, the applied and the woven, had a wide distribution, examples of which are illustrated. While applied design allowed of a variety of stitches and lent itself to many types of all-over decorations, the graceful curving lines of floral motifs so favoured by the Ojibwas or the severely angular geometric patterns also affected by them,

ing evil spirits. Certain ceremonies attended the cutting and carving of the cradle-board which was usually taken from the heart of the maple tree by the father, and the making and ornamenting, by the mother, of the swathing band which was a matter of great pride and infinite care. The cradle-band shown is a fine specimen of the old outline beadwork, done in the maple leaf design to correspond to the maple wood of the board which symbolizes long life.

Weaving seems to have been an art of long standing and wide usefulness amongst the Ojibwas from the early days



*Beautiful specimens of modern porcupine quillwork from Algoma — circular birchbark boxes solidly covered with quills, the background in natural colours and the design in gaily dyed quills.*

the woven work was usually superior in design and more frequently used to depict dream symbols. Many fine examples of woven beadwork have been found in narrow headbands, armlets, belts of various widths, as well as bags and pouches. These elaborate designs were usually carried in the worker's head and no record of them kept to assist the memory. In the applied beadwork, birchbark and paper patterns as well as pressed leaves were employed, each worker having her own designs which, together with thread and awl, she carried in a small sewing-bag.

One of the most intriguing uses of beadwork is seen in the decoration of cradle-bands around which have clustered all sorts of magic charms for propitiat-

ing evil spirits. Certain ceremonies attended the cutting and carving of the cradle-board which was usually taken from the heart of the maple tree by the father, and the making and ornamenting, by the mother, of the swathing band which was a matter of great pride and infinite care. The cradle-band shown is a fine specimen of the old outline beadwork, done in the maple leaf design to correspond to the maple wood of the board which symbolizes long life.

Weaving seems to have been an art of long standing and wide usefulness amongst the Ojibwas from the early days when basswood and cedar bark were used for mats, storage bags, and so on, down through later times when blanket ravellings and nettle-stalk twine were woven in quite intricate patterns into bags for personal belongings and gayly coloured trade yarn was netted into wide belts and long sashes.

Basket weaving has never been a highly-advanced art in Algoma because of the prevalence of birchbark from which handy and practical containers of all sizes can be readily fashioned by means of a few deft folds and stitches, the "makuk" being a typical general-purpose carrier. But some woven baskets of willow and the inner part of the basswood tree which abounds in certain localities, are seen, as well as a wide



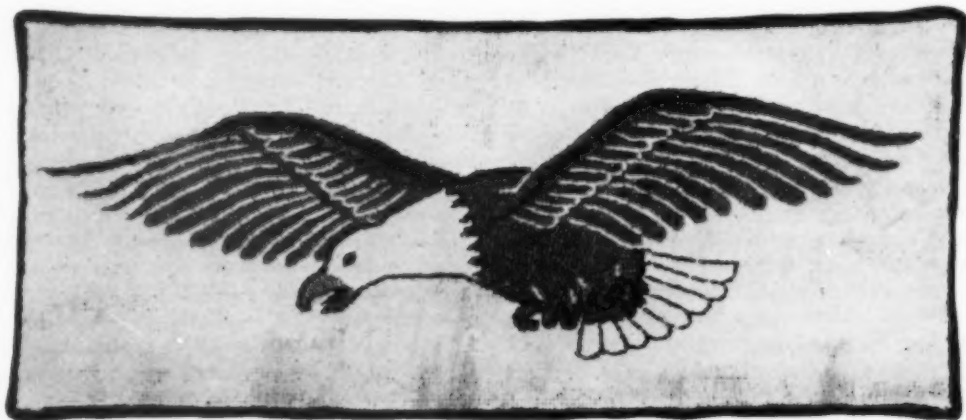
*The Bear Prowls at Sunset, a typical Indian rug "picture" full of symbolism and art. The quaint trees and islands and the lonely bear, as well as the symbolic inscriptions of the border, illustrate the effective use of black and white. The swastika, ancient symbol of luck, used in conjunction with the arrow, connotes "Good Luck to your hunting."*

selection of shallow dishes, trays and mats of birchbark combined with sweet grass and often ornamented with quill-work.

Another form of handicraft which used to be practiced by the most skilled craftswomen was appliqué design, usually done in coloured ribbons or cloth. The decoration was neatly sewn in the form of a border on leggings, moccasins and the binding bands of cradle-boards. A good example of this type of work is

seen in the form of a patch work quilt in one of the photographs.

Any consideration of Indian art must recognize the importance of their ancient realistic drawing or pictography, although in this the desire to communicate ideas quite obviously outweighed the artistic interest. Realistic representations of men, animals, celestial bodies and other objects were used in prehistoric times by this tribe in a form of picture writing which legend attributes

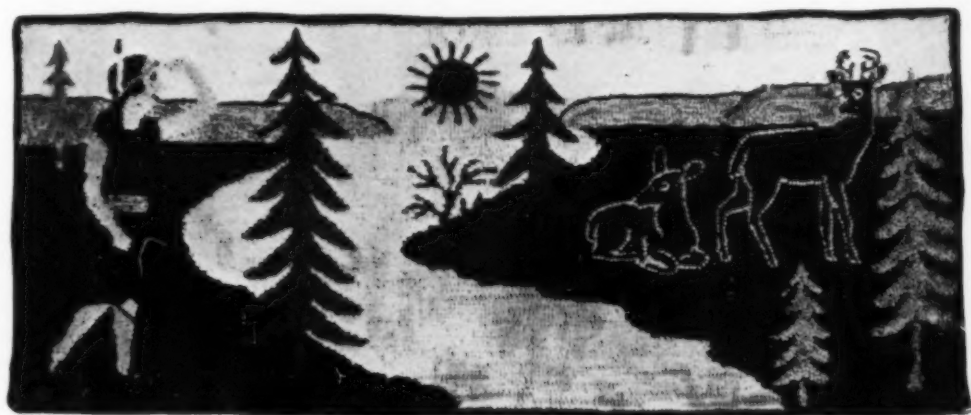


*The Lone Eagle. An attractive rug design rich in action as it is in detail. The flight of birds was considered of great symbolic import, especially at the time of a hunting expedition or war party, and this mighty king of the air figured prominently in legendary lore.*

to their great culture hero Nanibozho or Hiawatha.

In discussing Chippewa music Frances Densmore, in Bulletin 45, Bureau of American Ethnology, tells of finding birchbark records of songs of great antiquity in which the idea of the song was preserved by these pictographs. From their crude beginning as a simple record of events or the preservation of a dream symbol in the form of a decorative design or charm, these signs became standardized into a code which was understood generally and used widely as a primitive form of writing. Schoolcraft, in "The American Indians," tells

uttering to another, and what a limited language would sometimes prevent his fully revealing, if he wished, symbols and figures can be made to represent and express. . . . Picture-writing is, indeed, the literature of the Indians. It cannot be interpreted, however rudely, without letting one know what the Red Man thinks and believes." The interesting and significant feature is that to-day, in a handicraft borrowed from the white man, yet one typical of this continent and its pioneer settlers, we find a throw-back of this use of realistic design and picture-writing, coupled with tribal legend and folk-lore, that is characteristic



*Hiawatha's First Hunting Trip. This design commemorates the first hunting adventure of the famous Ojibwa hero. The green pine trees, the rushing brook, the red setting sun and the brown deer form a typical Algoma scene.*

of the custom of the Ojibwas to leave on a camp site a birchbark picture or record of the previous events to guide those coming after. Apparently primitive man had a nose for news and looked eagerly for these friendly news bulletins of the wilds. Both Schoolcraft and Densmore give specimens of these crude "pictures" as does H. G. Wells in "The Outline of History."

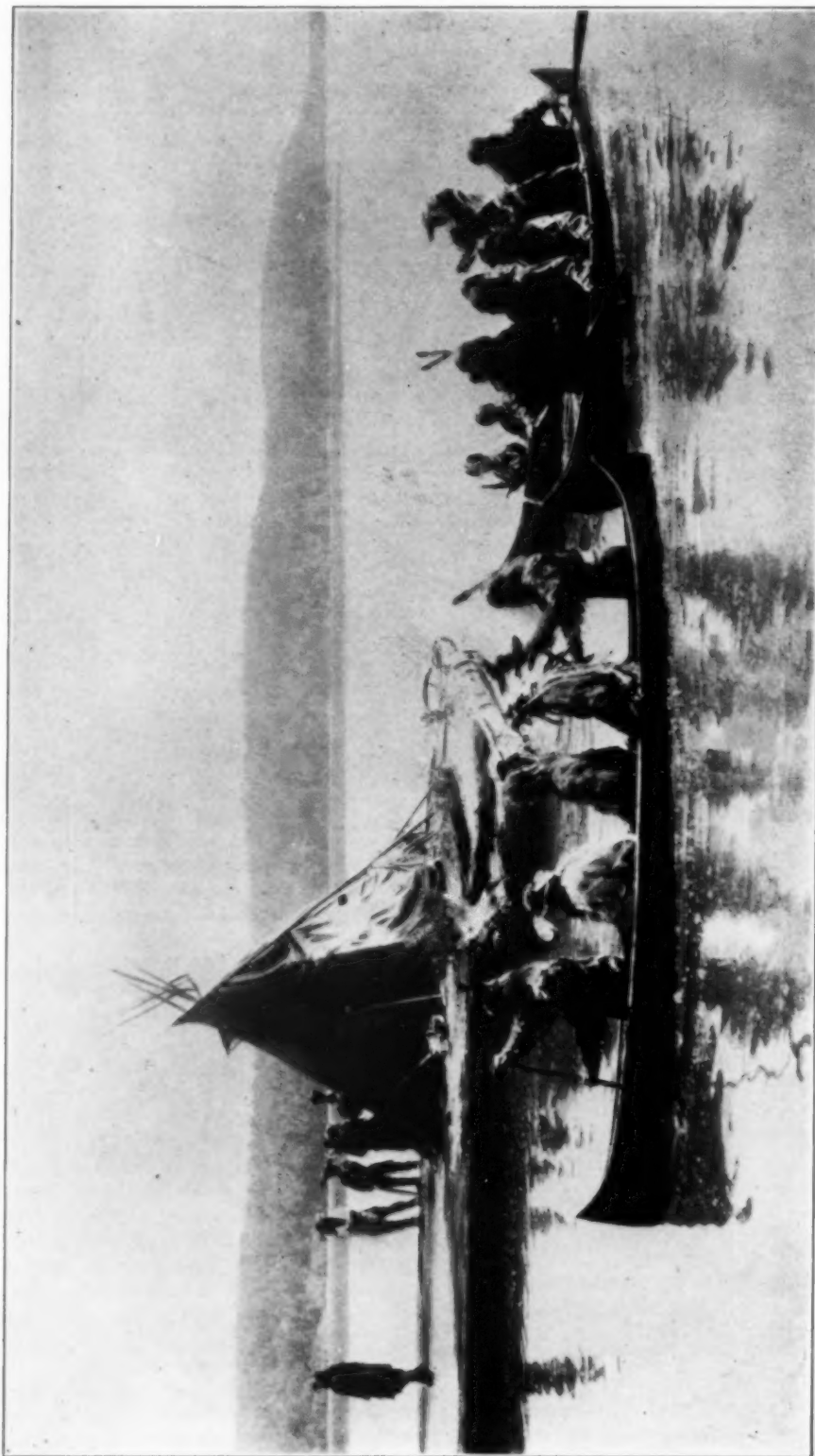
This picture-writing is of the utmost significance not only because it was the Indian's only graphic mode of communicating thoughts and therefore valuable in revealing his ideas on religion, war, magic and the like, but because of its influence on their modern handicrafts. Schoolcraft, who lived among the Indians says, "What a stoic and suspicious temper would often hold him back from

and unique. The Indian women are making original "pictures" in hooked rugs, some of them as symbolic as the ancient pictographs.

The making of the floor coverings has always been the particular care of the Ojibwa women from the earliest days, when mats were woven from rushes or strips of cedar bark for sheathing and flooring of lodges and tepees, as is still practiced in this locality. When cloth became available through trade, the ingenious workers used strips of old cloth and wove them into bands which were in turn sewed together in round, oval or oblong shapes for rag floor mats, a simple pattern being achieved by the different colours used.

A great stride forward in artistic expression was made when a new and more





Scene from the Hiawatha Pageant shows Indian braves in ceremonial attire coming to the wedding feast of Minnehaha singing songs as they paddle towards the stage.

Canadian Pacific Railway photograph.



flexible technique for the use of old cloth was borrowed from the habitant and hooked rag rugs were the result. Not ordinary hooked rugs, but rugs with a story, primitive "pictures," now realistic, now symbolic, portraying some feature of everyday Indian life, some phase of the wild beauty of the country, some picturesque legend of long ago, for these Indian women artists originate their own designs, as one could tell at a glance. Innocent of artistic training, and so unhampered by conventional standards, the rug-maker takes her blue pencil and draws on the burlap sugar-sack which is her background, daring designs, arresting in their fresh originality and sometimes remarkable in their symmetry. Now her animals and birds appear perfect in form and proportion, now just enough out-of-drawing to be engagingly primitive; again her scenes are sophisticated in a piquant, artless way that disarms while it charms the critic. Always her designs have a zest and vitality without which there can be no true art, while as an interpreter of wild life she has by virtue of her racial inheritance an inherent depth of sympathy and understanding that the white woman can never approximate.



*Nokomis, grandmother of Hiawatha, holding the infant hero in his cradle-board—a scene from the Hiawatha Pageant. Note the elaborate beaded design on the cradle-band. The board was believed to make the infant grow straight and sturdy and in it he was easily carried on his mother's back through forest trails without mishap, the hoop protecting the child's head.*

Perhaps the most arresting characteristic of these hooked rugs is the quality of the workmanship, which is so perfect and regular that at times it is hard to believe it could have been done by hand and with so simple a tool as an ordinary

hook, for the back of the rug is almost as perfect as the face. I discovered the secret of the Ojibwa's skill one day while watching a dusky old craftswoman who plied a queer hooking tool cleverly contrived from a pair of scissors. (I saw another hook made from an old fork!) Cutting the material in exceedingly narrow strips, making the stitches even, short and quite close together, gives the rug the softly-patterned appearance of tapestry. Then, too, cotton, wool and silk pieces are ingeniously combined, the joining done so inconspicuously along the edges of the design, and the rough edges folded under so skilfully that no unsightly ends are visible, a truly fine technique not often observed.

Because they meet the modern flair for a patch of vivid colour on the wall, these charming hooked rugs

are much in demand as wall hangings, especially for use with the colonial and cottage type of furniture so much in vogue. Collectors and interior decorators have gone to great lengths to



*The Canada Goose, an original Indian design on a hand-hooked rug. Honking their way in full flight across an azure sky dotted with shapely clouds, past waterlilies and bulrushes in marked colour contrast, the wild geese have shapely bodies, white with brown wings, and eye, bill and feet delicately fashioned of orange silk.*



*Ahmic the Beaver, an extremely decorative rug design, delightfully uncrowded. The busy brown forms of the beaver stand out in bold relief against a delicately shaded background of sky and water and are framed on either side by graceful cattails in brown and green.*

unearth fine old specimens of original design in the Maritime provinces and New England states. "Hooked rugs are still being made to-day," writes one collector, ("Collecting Hooked Rugs," by Waugh and Foley,) "usually, however, upon stamped patterns which bear small relation to the original art and are obviously valueless. Only in a few remote districts in Canada and Newfoundland does hooking rugs survive as a real art; here we occasionally find patterns being drawn at home in the old manner, but every year sees the practice drawing closer to its end." It is to be hoped that an appreciation of genuine art such as the Ojibwa have evolved will make such a gloomy prophecy impossible of fulfilment.

It may well be asked how can a crude primitive people produce unaided and untutored such sheer beauty of colour and design? How could an Indian woman draw as symmetrical a design as the Canada Goose, or Ahmic the Beaver, as illustrated on page opposite. All aborigines have been able to draw and some most skilfully. Wells shows remarkable drawings of animals done on cliff and cave walls, antlers, horns and stones by prehistoric man of the Reindeer Age, and says: "Of all modern races, none have shown so pictorial a disposi-

tion; the nearest approach to it has been amongst the American Indians." The soft, warm tones of native dyes explain much of the colour charm of the work, for in the remote villages vegetable dyes that will resist time and sunlight are still brewed.

Some of the rug designs are realistic, some adopt motifs that recall the ancient symbols of picture-drawing. For example, "The Bear Prowls at Sunset," one of the illustrations, with its quaint inscription which is a fine example of typical Indian art; and one might even say of prehistoric design, for it reflects several motifs credited by Wells to early Neolithic culture — the association of the sun and the serpent in decoration and worship and the use of the swastika sign for good luck. Possible origins of this widely distributed symbol are discussed in Haddon's "Evolution in Art" and Brinton's "Myths of the New World."

Often the rugs recall and imitate the old quill and bead designs in decorative borders, repeated motifs and quaint arrangements of figures or symbols. But altogether they are a rare combination of folk-tale and folk-art that is not excelled in beauty or interest by any of the older forms of handicrafts practiced in Algoma.





*Corner of a Mines Branch bituminous sand quarry near McMurray where tree trunks, embedded in the sands many millions of years ago but preserved by bitumen, are being encountered. These trees, of a genus not found in North America but resembling growth indigenous to Japan, may eventually contribute one more link connecting the early history of America with that of Asia.*



# Bituminous Sands of Alberta

By S. C. ELLS

THE progress which is being made within the Canadian mineral zone reasonably accessible to present rail transportation, constitutes one of the greatest chapters in the history of mining. From those areas in northern Ontario which witnessed, during the early years of the present century, the first great mineral development of the New North, the zone of mining activity has been rapidly extending east and west and north, through Quebec, Manitoba and Saskatchewan. As yet, such development has not reached the Province of Alberta, and it is with one of the undeveloped potential mineral resources of that province, the bituminous sands, that the present article is concerned.

Bitumens and asphalts have long played an increasingly important part in the history of the human race, and records of their use in the near East may be found in very early writings.

From small beginnings more than 50 centuries ago, its use has grown until to-day the annual production in the United States alone approximates 4,000,000 of tons.

Long before the coming of the white man to northern Alberta,



Of the Geological Survey of Canada. Mr Ells has specialized in the development of bituminous sands.



A lone sentinel, one of the Government wells, 30 miles north of McMurray. In muskegs and in hilly country, transportation of the heavy equipment constitutes a serious problem.

the aborigines who roamed the northern lakes and rivers knew that the gods had hidden gifts in the banks of Athabaska River where it flows Arctic-ward through the north-central portion of what is now the Province of Alberta. They wove fantastic legends about the great black cliffs which border the stream for many miles—but made practical use of the bituminous sand itself. When mosquitoes swarmed hungrily, they would set alight the bituminous sand and take refuge from the singing pest in the dense clouds of pun-

gent smoke. When summer waxed hot, they would scan the black palisades for the first sign of a gift from the gods that spelled safety for them as navigators. For with the black bitumen that oozed from the cliffs they calked their frail river craft. Thus, the aborigines were the first men to make practical use of what is now recognized as the greatest known deposit of solid asphaltic material.

Regarded merely as a mineral deposit the bituminous sands were never really "discovered." From time to time during the past 200 years, occasional reference to this remarkable occurrence had appeared





*Walks laid by Mr. Ellis at Jasper Lodge, Jasper, Alberta.*

in the writings of travellers and others, but all such references were vague, indefinite and frequently misleading. With the advent of the unfortunate boom days of 1910-13, promoters organized companies and, in some instances, disposed of utterly worthless stocks to the public. Real estate values at Fort McMurray — then an obscure trading post hundreds of miles from rail transportation — rose to boom figures before the bubble burst.

In 1913, an inquiry regarding the bituminous sands of the McMurray area was received in Ottawa by the Canadian Department of Mines. A study of records and reports available indicated that nothing of a really definite nature was known, either as to the extent of the deposit or as to the character of the material itself. Moreover, the area was unsurveyed, and that portion of the map virtually a blank. Accordingly, at the suggestion of the writer, a party was organized to undertake a field investigation, and during the years which have since elapsed, a comprehensive programme of field and laboratory work has been completed. This work has covered a wide range of activities — mining, geological, laboratory, and paving — any one of which,

in itself, would easily form the basis of a series of technical papers.

Many of us on entering large industrial centres are accustomed to accept as part of the natural order of things the many plants and factories — great and small — with their stacks and sky-signs and busy activity. But how many of us pause to consider what each of these plants, with their stacks and sky-signs, represents? Most of them represent years — and sometimes scores of years — of studious and laborious effort successfully carried out by men whose names are for the most part unknown, and whose chief reward has been that of successful achievement. They represent the successful solution of many problems — problems for the mechanical engineer and for the chemical engineer, problems of marketing and problems of financing. Similarly, in Northern Alberta, year by year in the field and in the laboratory, the foundations have gradually been laid for what may, in the not distant future, become an important industry.

It is unnecessary to elaborate on the subject of the development of our natural resources, for in Canada such development touches, directly or indirectly,

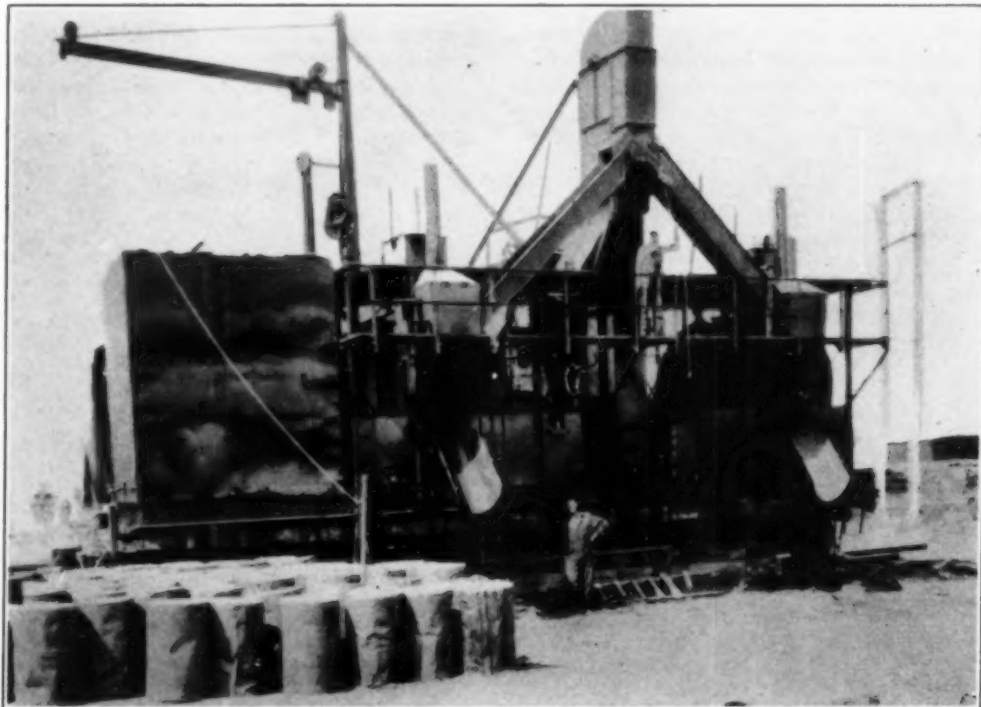
the lives and well-being of practically every man, woman, and child.

The work carried on by the Mines Branch in the McMurray area during the interval since 1913, may be regarded as an example of the type of practical applied research which has laid the foundations of the mineral development in Northern Canada. The work has not been spectacular — there have been no sensational flights to remote unpeopled areas, few high lights and fewer "purple pages." It has been a tale of drab, indeed almost sordid, hardship. But the ultimate object, to make two blades grow where none grew before, has been adequate compensation.

It is not the writer's intention to present a technical discussion of the many phases of the Mines Branch investigation of the Alberta bituminous sands. Many millions of years ago — in Cretaceous times, — a vast body of sand, thousands of square miles in extent, was deposited to a depth of 150 to 200 feet. Subsequently, through

long periods of time, while the surface of the area rose and fell and while great bodies of water appeared and disappeared, sandstones, shales, and other sediments were superimposed to a depth of hundreds and probably thousands of feet. Meanwhile, like some great sponge, the underlying Cretaceous sands received and absorbed an inflow of petroleum estimated at not less than 100 billions of barrels. Even allowing for subsequent loss through evaporation due to various causes, there still remains sealed away in the bituminous sands a vast body of semi-solid bitumen. In due time rivers deepened their valleys through overlying shales and sandstones and in places eventually cut through the bituminous sand itself. To-day the exposures thus formed flank the Athabaska and certain of its tributaries through a total distance of more than 260 miles.

For the most part the surface of the area underlaid by bituminous sand is marked by wide muskegs, low sandy



*Portable railway type paving plant designed and built by Mr. Ellis in 1930. This plant has a large capacity and is adapted to the use of either natural bituminous sand or of separated bitumen.*

ridges, and shallow ponds. Everywhere is seen evidence of the work of countless beaver — now largely exterminated. The once valuable timber has been to a great extent destroyed by forest fires and replaced by dense second growth. Truly in many respects it is a "land forlorn."

At the outset of the Mines Branch investigation, and as a basis for subsequent work, mapping of a part of the area underlain by bituminous sand was undertaken. During a period of 30 months — winter and summer — during which time some 3,000 miles of bush transit line was run, 1,250 square miles of difficult wilderness was reduced to exact topographical maps. Moreover, east-west sections, representing upwards of 700 miles of levelled profiles, were prepared. These illustrate relative thickness of overburden and of bituminous sand, and thus indicate those areas within which commercial development may best be undertaken. At the same time detailed examination by drilling was carried on, and the character of the bituminous sand determined in a laboratory housed in a tent and carried from point to point in the field. This work was not accomplished without difficulty. In the late fall of 1913,

in rain and snow, the writer's crew brought out the first representative shipment of samples when they dragged a heavily loaded 40-foot scow up 240 miles of rapids and fast water. In the following year a larger shipment of 1,400 sacks was hauled a similar distance, when 23 teams, without tents for men or horses, broke a road through the snow in the bitter cold of January and February. On another occasion two survey parties, working inland from Athabaska River, spent the winter in sub-Arctic cold without tents or stoves. These and many other incidents have become epics in the north country. Incidentally, it is part of the 'day's work' for those who travel in the undeveloped parts of Canada to see many strange sights and to undergo strange and new experiences. But with the return to civilization these become blurred and in time fade out altogether. Few of our field engineers and explorers are versed in the art of story writing. But if a short course in such work were given at the university as a part of the academic training, what a wealth of incident might be given to the general "stay at home" public!

As the work proceeded, new problems presented themselves. It was recognized



*Section of highway leading to Jasper Lodge, Jasper, Alberta. This and other demonstrations have proved undoubted merits of Alberta bituminous sand when used for paving purposes.*



*First pavement ever laid with Alberta bituminous sand. This pavement, constructed by Mr. Ellis in 1915, is still in excellent condition after 15 years under heavy traffic, and maintenance charges to date have been nil.*

that a very large tonnage of bituminous sand was available, but was the material adapted to the surfacing of streets and highways? What was the nature of the unaltered bituminous sand at points removed from weathered exposures? How could heavy beds of bituminous sand be drilled at depth? Could the bitumen itself be separated from the associated sand and turned into various petroleum products? Could mining be successfully undertaken with standard equipment available? The questions of markets, freight rates, and the interesting of large capital were of equally vital importance.

In view of the economic and social importance of present day motor traffic, the desirability of demonstrating the use of bituminous sand and bitumen derived therefrom for surfacing streets and highways in Western Canada requires no emphasis. In the United States annual expenditures on rural highways are now in excess of \$1,000,000,000 and the annual saving to users of motor cars due to such highway improvement is estimated to be at least as much.

In Canada expenditures and probable resultant transportation economies are at least proportionately as great. Today highway construction and maintenance present one of our greatest engineering problems, and at the same time one of the greatest opportunities for true statesmanship. Research in

connection with any highways programme is fundamental both in the physical and economic fields. Not only is skilled technical intelligence needed, but honest and efficient administration. The building of adequate highways for a province or a nation is not possible except by long continued and consistent programmes. Political changes and timid wavering policies result only in waste and in failure to provide the needed highways. With such considerations in mind the writer has designed, constructed and operated three demonstration mixing plants for the manipulation of bituminous sand. The first installed at Edmonton in 1915 was used in connection with the surfacing of a portion of Kinnaird Street. This pavement, after 15 years, is still in excellent condition and maintenance charges have been nil. The second plant, embodying entirely new principles, was operated at Jasper, Alberta, for the production of some 35,000 square yards of paving mixture. The third — a large portable railway type plant — was completed in 1930. This work involved the opening up of two quarries near McMurray, the development of transportation to end of steel, and a great amount of laboratory work. As a result it has been definitely demonstrated that either natural bituminous sand, or bitumen separated therefrom, is entirely suitable for the construction of excellent pavements for city streets or country highways.



The problem of definitely proving up a really large tonnage of bituminous sand by accurate core sampling at considerable depths presented serious difficulty. Results of inquiry in America and abroad, for suitable drilling equipment, were negative, and it was necessary to evolve new procedure. In the course of three seasons, however, one of the writer's field parties, drilling in various parts of the McMurray area, not only demonstrated a satisfactory type of drilling equipment but definitely proved up and accurately sampled a very large tonnage of bituminous sand. Possibly one of the most difficult, and at the same time hazardous pieces of work, was the sinking of shafts through the bituminous sand in order to determine whether recovery of the bitumen by drainage methods might prove feasible. Though these shafts were fully timbered, the unstable nature of the sand proved an element of serious danger. Results, however, were conclusive and demonstrated that the adoption of underground mining would not be practicable, that drainage methods such as have been introduced in Alsace, France, are not feasible, and that unaltered bituminous sand varies markedly from the class of material found along adjacent exposed outcrops.

One of the many interesting features brought to light by the above and subsequent mining operations, consists in the discovery of excellent examples of Cretaceous (?) wood. While the Cretaceous (?) sands were being deposited, trees and other water-borne driftwood no doubt accumulated — even as it does to-day — in eddies and on bars. Buried in the accumulating sands, and subsequently insulated by inflowing bitumen, this wood, after many millions of years, is still well preserved and may be readily cut with a knife. One interesting example consisted of a log among the roots of which there still remained embedded a mass of clay approximately 200 pounds in weight. It requires but little imagination to envisage this 120-million-year-old episode; the tree overhanging some northern stream, the current undercutting the clay bank, the tree, with the soil still adhering to the roots, finally falling and being carried by

the current down to its present resting place. And now after hundreds of thousands of centuries, the curtain is again lifted! The log once more emerges from its long oblivion and in the hands of trained experts, becomes one more tangible link with an epoch long before the dawn of history.

From the outset the writer had recognized that large-scale development of the bituminous sands would presuppose separation of the admittedly high grade bitumen from the associated sand. Accordingly, in 1915, he was appointed a Fellow of Industrial Research at the Mellon Institute at Pittsburgh, and there carried out a series of laboratory experiments with a view to determining a cheap and efficient method for the recovery of pure bitumen. As a result of this work, it appeared that the use of flotation cells offered the best chances of success. It is of interest to note that a responsible organization which has recently secured important concessions in the McMurray field, propose to adopt this method of treatment in connection with proposed large-scale development of the bituminous sands.

At the same time, a careful study was made with a view to determining the products — notably gasoline, lubricating oil and fuel oil — that might be derived by destructive distillation.

Production of petroleum from Alberta bituminous sands will constitute a problem which is, in many respects, similar to the mining and treatment of low-grade ores. Satisfactory financial returns will depend on large throughput capacity, together with able technical, business, and administrative control. Operations will be directly affected by the petroleum situation in the United States and other foreign fields, the trend of which is, in some instances, indefinite. Other factors to be considered include possible competition with certain suggested substitutes for petroleum, labour supply, transportation, and the developing and holding of stable and assured markets.

The world's consumption of petroleum products in 1929 was approximately one and one-half billion barrels. In the same year Canada imported crude





*North end of bituminous sand quarry opened by Mr. Ellis near McMurray in 1928. From this quarry thousands of tons were shipped to Jasper, Alberta, and used in the surfacing of the highway leading to Jasper Lodge.*

petroleum and petroleum products to the value of more than 76 millions of dollars. Yet, theoretically, the bituminous sands of Alberta could supply the world's requirements for a long period of years. It is evident therefore that possible production of petroleum from the bituminous sands should be given careful consideration. Such production would be relatively free from certain well-recognized hazards that attach to the present production of well petroleum. Amongst these may be mentioned the uncertainty of locating oil pools, the uncertainty respecting amortization, and the fluctuating price hazard due to discoveries more advantageously situated with respect to markets. In not a few fields wells are to-day costing upwards of \$200,000 each, while their life and productivity — and resulting profit or loss — are beset by uncertainty. On the other hand, in the McMurray field the number of barrels available in any given sub-area can be definitely established in advance by core drilling and simple measurements. Strategically as well as economically the bituminous sands of Alberta should be regarded as one of the really great potential resources of Canada. If for any reason our foreign supply of petroleum should be curtailed or cut off, the resulting deficiency could be made up from the McMurray field.

If successful commercial recovery of the bitumen is assumed, can the bituminous sand be economically mined by standard equipment? As a result of the investigation of this phase of the problem it appears that mining does not present serious difficulty. The uncompacted overburden can undoubtedly be removed by hydraulicing at low cost and apparently the bituminous sand itself can be excavated by standard equipment known as shale planers. Determination of actual costs must await practical demonstration of this type of equipment, but it appears that excavation of bituminous sand and the removal of overburden can be carried out at a cost of not more than 30 cents per ton of bituminous sand.

But if, as yet, actual commercial development of the bituminous sands has not been undertaken, conditions

favorable to such development are decidedly in advance of those which existed a few short years ago. In 1913 travel to McMurray was regarded almost as an exploit. The settlement consisted of possibly a dozen scattered log huts and two primitive fur trading "stores." To reach McMurray in summer one constructed a more or less casual scow at Athabaska, engaged a more or less irresponsible local pilot and during subsequent days or weeks negotiated 240 miles of river including many heavy rapids. At McMurray the scows were broken up and sold for lumber and the traveller returned to civilization the best way he could. In winter snow shoes and dog teams were the sole means of travel. To-day standard sleepers and diners are attached to all trains and at the northern terminus the traveller steps into a waiting taxi.

In 1913, apart from the mysterious 'moccasin' telegram, no telegraph service was available while postal communication was of the most sketchy character. To-day McMurray is served by two land wires and a regular and efficient postal service. In 1913, the new arrival put up his tent and mounted guard to protect his goods from the depredations of native dogs; to-day he can find accommodation at a good hotel and dine at one of several restaurants. The impossible methods of transportation which prevailed a few years ago are now replaced by modern railway facilities and in 1927 heavily loaded cars brought thousands of tons of bituminous sand to Edmonton in a few hours.

As a mechanical problem, recovery of petroleum products from bituminous sand may be considered as entirely feasible. As a commercial problem such recovery is largely a question of supply and demand. As in the case of oil shales, commercial development will be feasible when for any reason the cost of well petroleum and its derivatives reaches a point approximating the cost of production of hydrocarbon from bituminous sand. Such development implies adequate financial resources and should not be undertaken by men of small capital or by those who desire quick returns on their investment.

**THE SMOKE OF THE BRITISH EMPIRE**

**KERSEY, SUFFOLK, ENGLAND**

The village of Kersey, near the market town of Hadleigh in Suffolk, is a striking example of those picturesque treasures in which rural England is so rich. For, where else could one find such quaint, half-timbered cottages and the "spish" in the village street?

Pocket tin of Fifty—55 cents

**T**HE FACT THAT PEOPLE with a critical regard for quality prefer W. D. & H. O. Wills' Gold Flake cigarettes is a gratifying tribute to their standard of excellence. Smokers who have covered the whole gamut of cigarette brands find fullest satisfaction in these fine Virginias. They appreciate the cool fragrance traditionally associated with a firmly made English cigarette.

A short acquaintance with W. D. & H. O. Wills' Gold Flake cigarettes will convince you that they are indeed "the cream of the crop." You may buy them in cellophane wrapped packages of twenty and in pocket tins of fifty. These are the largest selling 50's tin in Canada. They are a particularly convenient way to purchase your home supply of Gold Flake cigarettes.

W. D. & H. O. WILLS'

# GOLD FLAKE CIGARETTES

*a shilling in London—a quarter here*

## Editor's Note Book

The outstanding events of 1933, from a geographical point of view, will be the British Mount Everest Expedition, the fourth attempt to climb the world's highest mountain, and the practically simultaneous effort by another British expedition to fly over the summit. No serious attempt will be made by the fourth Everest Expedition to solve scientific problems, its entire energy being directed to the strenuous business of reaching the summit. The Expedition is led by Hugh Ruttledge, who has had many years' experience climbing in the Himalayas. With him are Captain E. S. Birnie, Major Hugh Boustead, T. A. Brocklebank, Colin G. Crawford, Dr. C. R. Greene, J. L. Longland, Dr. W. W. McLean, E. O. Shebbeare, E. E. Shipton, F. S. Smythe, L. R. Wager, G. Wood-Johnson and P. Wyn-Harris, all of whom, it is hardly necessary to say, are mountain-climbers of wide experience. The flying expedition is led by Air Commodore Fellowes, who is accompanied by the Marquess of Clydesdale as chief pilot and Colonel Blacker as observer. Its principal object is not so much to fly over the summit of Everest as to obtain a series of vertical and oblique photographs of the mountain and its approaches. The climbing expedition has obtained permission to pass through Tibet, and the airmen have been permitted to fly high over Nepal.

\* \* \*

Archibald MacMechan, who retired in 1932 after many years' service, from the staff of Dalhousie University, Halifax, and returned not long ago from a long holiday in Europe, has in the last number of the *Dalhousie Review* an entertaining article under the descriptive title "Neapolitan Days."

\* \* \*

One of our corresponding members writes: "I receive many letters from an old friend in Natal. In her last, speaking of the recent earthquake whose tremors were felt throughout South

Africa, she mentions that she and her old Indian gardener Perasam were busy training a rambler rose on her verandah on the last day of 1932. A noise like an express train thundered by and terrified her. She was overcome by nausea, but Perasam placidly remarked "It is nothing. It is the god who carries the world on his shoulders shifting it to a more comfortable place, as it is the end of the year."

\* \* \*

The Dominion Astrophysical Observatory at Victoria, B.C., has issued a statement on that much-disputed question, can the aurora borealis be heard? Members of the Royal Canadian Mounted Police in the Arctic, missionaries, traders, and a number of other reliable persons were asked to report the result of their observations. Altogether 144 persons reported having heard auroral sounds. "Most of the accounts are from persons whose intelligence and reliability are beyond question, and while the evidence they present indicates that the sounds are heard rarely in comparison with the frequency of the displays, the actual existence of a sound accompanying displays of unusual intensity seems to be placed beyond reasonable doubt. The majority of observers describe the sounds as of a swishing, rustling or crackling nature."

\* \* \*

A correspondent in Saint John, N.B., apropos of the reference in this department of the January number to an ancient nursery rhyme, writes that she too had puzzled over the problem of gathering nuts in May, and had found it equally difficult to account for the other version as it involved the highly improbable idea of gathering nuts and may at the same season of the year. "Finally" she says "in an article on 'Maytime Celebrations' in an English magazine I discovered the real solution. The original words of the song are 'Here we come gathering knots of may'". So that is that!



## CONFIDENCE AND SATISFACTION

Applications for new assurances were received by the Sun Life Assurance Company of Canada at an average rate of more than One Million Dollars for every working day of 1932.

During the same period, the Company paid out to policyholders and beneficiaries more than \$360,000 for every working day.

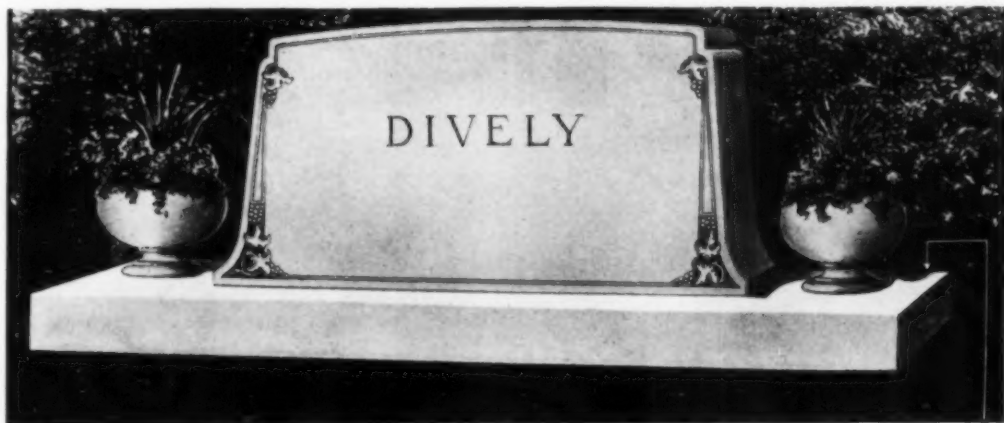
Of the applications for new business in Canada, about forty per cent was from persons already holding policies in the Sun Life.

Sun Life Policyholders are both *SAFE* and *SATISFIED*.

**SUN LIFE ASSURANCE COMPANY OF CANADA**

HEAD OFFICE

MONTREAL



### Genuine ROCK of AGES Granite

Is quarried only in the famous Rock of Ages quarries at Barre, Vermont, but every Rock of Ages memorial erected in Canada is *completely finished in Canada* by highly skilled Canadian Craftsmen.

Only accredited Rock of Ages dealers display memorials upon which this tiny inconspicuous symbol of security—less than an inch in diameter—is unobtrusively etched.

Such dealers will gladly furnish a certificate containing an absolute guarantee of quality and durability signed by the Rock of Ages Corporation and their Canadian distributors.

#### THE EVERLASTING GRANITE MEMORIAL

Canadian Distributor  
**STANSTEAD GRANITE**  
Quarries Co. Limited  
B E E B E, Q U E B E C

Booklet "How to Choose a Memorial" on request.

Name \_\_\_\_\_

Address \_\_\_\_\_





# EUROPE



All Expenses **\$334**

See  
SCOTLAND  
ENGLAND  
HOLLAND  
BELGIUM  
GERMANY  
FRANCE  
in 30 Days

... All-expense tour prices from \$260 to \$979 include round trip ocean passage, hotels, meals, travel in Europe, guide service, motor trips, admissions to galleries and museums — even your tips! Write for free booklet "E".

## TRAVEL GUILD

372 Maine Street, Winnipeg, Canada



## Travellers Cheques

are accepted at par by merchants and others in payment for merchandise, by hotels in payment of accounts, by Steamship, Railway, Sleeping Car Companies and Tourist Agencies for cost of tickets and other transportation expenses — and are cashed at par by all Express Agents and thousands of Banks throughout the world — including all Chartered Banks and their Branches in Canada.

*They may be CASHED or SPENT the world over — and are the safest and most convenient travel funds whether travelling by Rail, Ship, Motor or Plane.*

**Get them from any Agent of the Canadian Pacific and Most Banks**

## - Travel - Adventure - Recreation

The proposed extension of the Gati-neau Valley railway from Maniwaki into the north country, while doubtless intended mainly to bring Ottawa and Montreal into closer touch with the mining camps, incidentally facilitates the access of sportsmen to a region of lakes and rivers teeming with fish and woodlands full of game. What the sportsman may lose in the enjoyment of a long canoe trip he will gain in the saving of time getting to and returning from his destination. That may be an unimportant consideration to some, but undoubtedly it will make all the difference to a good many men whose time for recreation is strictly limited. One hardly realizes, until he has studied an up-to-date map, how many hitherto inaccessible regions, many of them offering rare sport to the fisherman and hunter, are to-day brought within easy reach by rail. There is the country tapped by the northern line of the Canadian National between Quebec and Lake Nipigon, the extension of the Temiskaming and Northern Ontario Railway to James Bay, and the line from The Pas to Port Churchill, to mention no others.

\* \* \*

An interesting circumstance in connection with Point Pelee National Park is the survival there of a number of fine walnut and oak trees, which for the most part have disappeared from this part of Ontario where they were once abundant. One finds, for instance, in old farm houses here and there hand-hewn walnut doors and window frames. Rondeau Park, in Essex County, has an even more remarkable variety of hardwoods. A botanical survey of this park "has revealed the presence of some 90 species of trees, and, with one exception — the Great Smoky Mountain country in Carolina and Tennessee — it is probable that no other area of similar size on this continent can boast a greater variety of tree growth."

## Airworthiness

"At Lloyd's" means seaworthiness in ships. Its equivalent in Air Transport is possession of a "C. of A." (Certificate of Airworthiness).

Both on sea and in the air standards are imposed by government authority to protect the safety of the passenger.

All planes operated by Canadian Airways carry a "Certificate of Airworthiness" issued by the Department of National Defence.

Because there can be no compromise with safety, Canadian Airways planes are inspected daily by air engineers who are licensed by the Government. Thus the strict requirements of a "C. of A." are continuously maintained by the daily inspection by our ever watchful air engineers.



SURVEY  
EXPLORATION  
PHOTOGRAPHY  
TRANSPORT

## CANADIAN AIRWAYS

Limited

MONTREAL

TORONTO

WINNIPEG

EDMONTON

VANCOUVER

FRED STERRY  
President

JOHN D. OWEN  
Manager



DISTINGUISHED by its world-famous reputation; ideally located on Fifth Avenue, facing the attractive vista of Central Park.

OFFERING its guests the unique privilege of quiet atmosphere with accessibility to fashionable shops and theatres.

Fifty-ninth St. and Fifth Ave.

The PLAZA New York



## Amongst the New Books

*Canada.* By Robert Rumilly and Paul Bertin. Paris: Librairie Larousse. 1933. \$2.25 in paper, \$3.25 in cloth.

A remarkably successful attempt to describe the Dominion by means of pictures, or rather to allow pictures to tell their own very effective story. "Within the borders of Canada" say the editors "are to be found on the one hand relics of the past, the features of France in the New World, the last scions of the proud redskin tribes, and, on the other, the spirit of modern progress, of growth, and the passion for beating more and more industrial and commercial records. For these reasons, and because of its wealth of landscape, Canada is superlatively interesting, and a knowledge of the Dominion is indispensable." The 312 illustrations are excellent in themselves, well selected, and admirably reproduced.

\*\*\*

*The Great Age of Discovery.* Edited by A. P. Newton. London: University of London Press. 1932. 15/.

An important contribution to the field of historical geography, by a group of men who are peculiarly well equipped to deal with this particular epoch. The treatment is particularly to be commended in that it gets away from the old practice of division into arbitrary periods and brings out very clearly that the Great Age of Discovery, like all other ages, was one of gradual evolution, one set of conditions merging gradually into another, with no abrupt or dramatic transition. With the cooperation of Dr Antonio Pastor, Dr H. P. Biggar (of the Public Archives of Canada), Dr Edgar Prestage, and others, Professor Newton carries his subject forward from the transition from the medieval to the modern age, through Spanish discoveries, the achievements of Columbus, and his contemporaries, to the search for a western passage, the first circumnavigation of the globe, and the attempt to find a passage by the north.

## NOTICE TO MEMBERS

In accordance with the promise of the Society to make good the non-appearance of the October and November 1932 issues, your membership has been extended for two months. If your membership was formerly due to expire with this issue, it will not now expire until the June issue. It is hoped that when renewal bills are received, Members will show their appreciation by immediately remitting fees.

Canadian Geographical Journal

## Canada

by

Robert Rumilly and Paul Bertin

An up-to-date pictorial volume of over 300 illustrations, beautifully reproduced by heliogravure process, depicting places, scenes and peoples of all provinces. Introduction and descriptions in French and English.

A valuable possession for all Canadian homes.

Illustrated cover ..... \$2.25

Attractive cloth binding, gold stamped ..... \$3.25

On sale at all leading bookstores of Canada

Published by **Larousse** Paris  
Montreal



## THE WORLD'S BEST COAL

Distributors

The CANADIAN IMPORT CO. Ltd.  
MONTREAL and QUEBEC

The F. P. WEAVER COAL CO. Ltd.  
MONTREAL and TORONTO